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491

-001 thru -002

Power Otolaryngology Chair

MIDMARK®

Service and Parts Manual

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IMPORTANT INSTRUCTIONS

General Safety Instructions

Safety First: The primary concern of Midmark Corporation is that this chair is maintained with the safety of the patient and staff in mind. To assure that services and repairs are completed safely and correctly, proceed as follows:

(1) Read this entire manual before performing any services or repairs on this chair.

(2) Be sure you understand the instructions contained in this manual before attempting to service or repair this chair.

Safety Alert Symbols

Throughout this manual are safety alert symbols that call attention to particular procedures. These items are used as follows:

DANGER

A DANGER is used for an imminently hazardous operating procedure, practice, or condition which, if not correctly followed, will result in loss of life or serious personal injury.

WARNING

A WARNING is used for a potentially hazardous operating procedure, practice, or condition which, if not correctly followed, could result in loss of life or serious personal injury.

CAUTION

A CAUTION is used for a potentially hazardous operating procedure, practice, or condition which, if not correctly followed, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

EQUIPMENT ALERT

An EQUIPMENT ALERT is used for an imminently or potentially hazardous operating procedure, practice, or condition which, if not correctly followed, will or could result in serious, moderate, or minor damage to unit.

NOTE

A NOTE is used to amplify an operating procedure, practice or condition.

Warranty Instructions

Refer to the Midmark “Limited Warranty” printed in the Installation and Operation Manual for warranty information. Failure to follow the guidelines listed below will void the warranty and/or render the 491 Otolaryngology Chair unsafe for operation.

- In the event of a malfunction, do not attempt to operate the chair until necessary repairs have been made.
- Do not attempt to disassemble chair, replace malfunctioning or damaged components, or perform adjustments unless you are one of Midmark’s authorized service technicians.
- Do not substitute parts of another manufacturer when replacing inoperative or damaged components. Use only Midmark replacement parts.

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SECTION I
GENERAL INFORMATION

1.1 Scope of Manual

This manual contains detailed troubleshooting, scheduled maintenance, maintenance, and service instructions for 491 Power Otolaryngology Chair. This manual is intended to be used by Midmark's authorized service technicians.

1.2 How to Use Manual

A. Manual Use When Performing Scheduled Maintenance.

(1) Perform inspections and services listed in Scheduled Maintenance Chart (Refer to para 3.1).

(2) If a component is discovered to be faulty or out of adjustment, replace or adjust component in accordance with maintenance/service instructions (Refer to para 4.1).

B. Manual Use When Chair Is Malfunctioning And Cause Is Unknown.

(1) Perform an operational test on chair (Refer to para 2.1).

(2) Perform troubleshooting procedures listed in Troubleshooting Guide (Refer to para 2.2).

(3) If a component is discovered to be faulty or out of adjustment, replace or adjust component in accordance with maintenance/service instructions (Refer to para 4.1).

C. Manual Use When Damaged Component Is Known.

(1) Replace or adjust component in accordance with maintenance/service instructions (Refer to para 4.1).

1.3 Description Of 491 Power Otolaryngology Chair

A. General Description (See Figure 1-1).

The 491 Power Otolaryngology Chair is an examination chair designed specifically for performing general medical examinations and procedures on ears, noses, and throats.

The major serviceable components of the table are the PC control board, membrane switch panels, interface board, back actuator, back capacitor, base actuator, base capacitor, base down limit switch, back up limit switch, headlock assembly, elevation column assembly which includes eccentric bearings, chair rotational lock assembly, back linkage mechanism, pivot thust bearing, and foot control which includes four footswitches.

B. Theory of Operation (See Figures 5-1 and 5-2 for wiring diagrams / electrical schematics)

Electrical Power:

Line voltage (115 VAC for domestic units and 230 VAC for export units) is supplied to the chair's PC control board. There is a transformer and associated follow-on circuitry on the PC control board which reduces the line voltage to approximately 12 VDC. The 12 VDC provides power to operate the circuitry of the PC control board, membrane switch panels, and foot control.

On domestic units, 115 VAC is continuously supplied to the electrical receptacle. Export units do not have electrical receptacles.

Chair Operation using Switch Membranes or Hand Control:

When a manual function button is pressed, the switch membranes send signals to the PC control board using three data lines. The PC control board determines which function was selected by analyzing which data lines contained a signal and then the PC control board energizes the relay for the selected function.

There is always line voltage at the common contact (output) of the relays and there is a relay for each up and down function: BASE UP, BASE DOWN, BACK UP, and BACK DOWN. So, when a relay is energized, line voltage is applied thru the relay and then across the motor coil of the selected function, causing it to run. When the button is released, the function's relay is de-energized, removing line voltage from the motor coil which causes it to stop running. The BASE DOWN function has an additional control circuit to prevent it from being freewheeled at the end of its down travel.

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SECTION I
GENERAL INFORMATION

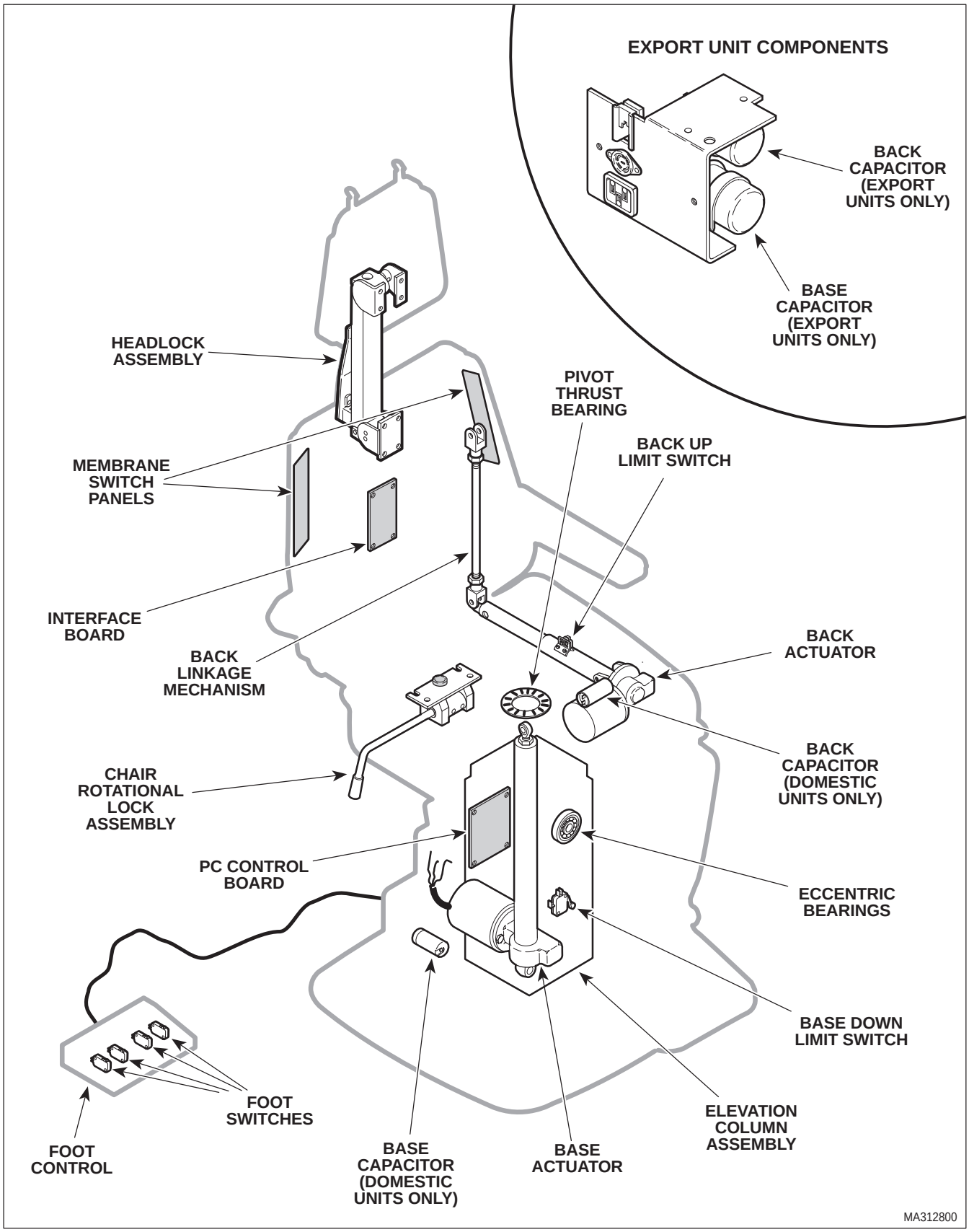

Figure 1-1. Major Components

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When the base down limit switch is tripped, the PC control board de-energizes the base down relay causing the base actuator to stop running (even if the button is still being depressed by the operator). This prevents the base actuator from being freewheeled when it reaches the end of its down travel. Otherwise, under heavy loads, excessive wear or damage to base actuator could result.

When the AUTO RETURN button is depressed, the switch membranes send signals to the PC control board using three data lines. The PC control board determines that the AUTO RETURN function was selected and energizes two relays: the BACK UP relay and the BASE DOWN relay. The PC control board keeps these functions running even when the operator releases the button. Then, the PC control board monitors the status of the normally open (N.O.) base down limit switch and N.O. back up limit switch. The N.O. limit switches are tripped, resulting in a closed circuit, when the actuators are in all positions but their auto return home position. When an actuator reaches its auto return home position, the limit switch becomes untripped and the PC control board de-energizes the relay for that function causing its actuator to stop. When both limit switches have become untripped, stopping both actuators, the auto return function is complete. The PC control board has a backup timing circuit in case the back up limit switch or base down limit switch malfunctions during the auto return function. If the PC control board does not see the status of both limit switches change within approximately 17 seconds of actuator run time, the backup circuit shuts down the auto return function.

The STOP button may be pressed at any time during the AUTO RETURN function. When the STOP button is pressed, the switch membranes send a signal to the PC control board. The PC control board determines that the STOP function was selected and stops the auto return function. This de-energizes the base down and back up relays, stopping the actuators.

Actuator Operation:

The base and back actuators are ball screw driven. The actuator assemblies contain a pivot point on the end of the ball screw. If an actuator assembly is run to the end of its stroke, the ball screw shaft spins inside the nut, which allows the actuator assembly to run without damaging or advancing the nut.

The base and back actuators have internal braking mechanisms which disengage when the motor starts running and engage when the motor stops running.

Diagnostic L.E.D. Information

There are thirteen L.E.D.'s on the PC logic board which can be used for troubleshooting aids. Table 5-1 lists all functions for this chair and which L.E.D's should illuminate when a button or footswitch is depressed. See Figure 5-3 for location of L.E.D.'s.

- The back up relay L.E.D. illuminates to indicate that the PC control board is energizing the back up relay.
- The back down relay L.E.D. illuminates to indicate that the PC control board is energizing the back down relay.
- The base up relay L.E.D. illuminates to indicate that the PC control board is energizing the base up relay.
- The base down relay L.E.D. illuminates to indicate that the PC control board is energizing the base down relay.
- The foot control back up L.E.D. illuminates to indicate that the PC control board is receiving a good signal from the back up foot switch.
- The foot control back down L.E.D. illuminates to indicate that the PC control board is receiving a good signal from the back down foot switch.
- The foot control base up L.E.D. illuminates to indicate that the PC control board is receiving a good signal from the base up foot switch.
- The foot control base down L.E.D. illuminates to indicate that the PC control board is receiving a good signal from the base down foot switch.
- The auto return back function L.E.D. illuminates to indicate that the auto return circuit for the back function is activated. The L.E.D. stays illuminated until the back function has completed its portion of the auto return cycle.
- The auto return base function L.E.D. illuminates to indicate that the auto return circuit for the base function is activated. The L.E.D. stays illuminated until the base function has completed its portion of the auto return cycle.
- There are three Data Line L.E.D.'s; data line #1 L.E.D., data line #2 L.E.D., and data line #3 L.E.D.. Different combinations of these L.E.D's illuminate to indicate if the proper input signal is being sent to the PC control board from the membrane panels or hand control.

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General Information:

All actuator motors have a thermal overload switch which will activate if the actuator assembly is run continuously. The actuator motor was not designed for continuous operation. The normal cool off period for the thermal overload switches is 10 - 20 minutes.

Each actuator motor has a capacitor which provides start up power and motor run power.

There is a 0.25 amp fuse, located on the PC control board, which provides over-current protection to the control circuitry of the PC control board.

There are two 5 amp slow blow fuses, located on the PC control board, which provide over-current protection for each function's motor (i.e, Base fuse protects base actuator motor).

On older units, there is a switch on the PC control board labeled SW1; this switch must be in the OUT position or the back up limit switch will be bypassed. On newer units, there is a jumper connector; this jumper connector must be removed or the back up limit switch will be bypassed. This prevents the back function from moving when the auto return function is selected.

1.4 Specifications

Factual data for the 491 Power Otolaryngology Chair is provided in Table 1-1. Also, see Figure 1-2.

Table 1-1. Specifications

Description	Data
Weight:	
Without Shipping Carton	350 lb (158.8 kg)
With Shipping Carton	375 lb (170.0 kg)
Shipping Carton	32 in. "L" x 29 in. "W" x 46 in. "H" (81.2 cm x 73.66 cm x 116.8 cm)
Dimensions (See Figure 1-2):	
Table Top Length (w/ headrest	75 in. (190.5 cm)
Table Top Width (w/o arm rests)	19.5 in. (49.5 cm)
Overall Width	26 in. (66.4 cm)
Table Top Adjustment	
Rotation	330°
Back Section	2 to 90°
Table Top Height (Adjustable):	22.0 in. to 31.0 in. (55.9 cm to 78.7 cm)
Table Top Speeds (@ 60 Hz.):	
Back Down	11 +/- 1 seconds
Base Up	12 +/-1 seconds
Weight Capacity (Maximum)	300 lb. (136.0 kg)
Electrical Requirements:	
115 VAC Unit	110 - 120 VAC, 60 HZ, 12 amp, single phase
230 VAC Unit	220 - 240 VAC, 50/60 HZ, 10 amp, single phase
Power Consumption:	
115 VAC Unit	1440 WATTS, 12 amps @ 120 VAC
230 VAC Unit	2400 WATTS, 10 amps @ 240 VAC
Recommended Circuit: A separate (dedicated) circuit is recommended for this chair. The chair *should not* be connected to an electrical circuit with other appliances or equipment unless the circuit is rated for the additional load.	

1.5 Parts Replacement Ordering

If a part replacement is required, order the part directly from the factory as follows:

(1) Refer to Figure 1-3 to determine the location of the model number and serial number of the chair and record this data.

(2) Refer to the Parts List to determine the item numbers of the parts, part numbers of the parts, descriptions of the parts, and quantities of parts needed and record this data (Refer to para 6.1).

NOTE
Ask the Purchasing Department of the company that owns the chair for this information. Otherwise, this information may be obtained from the dealer that sold the chair.

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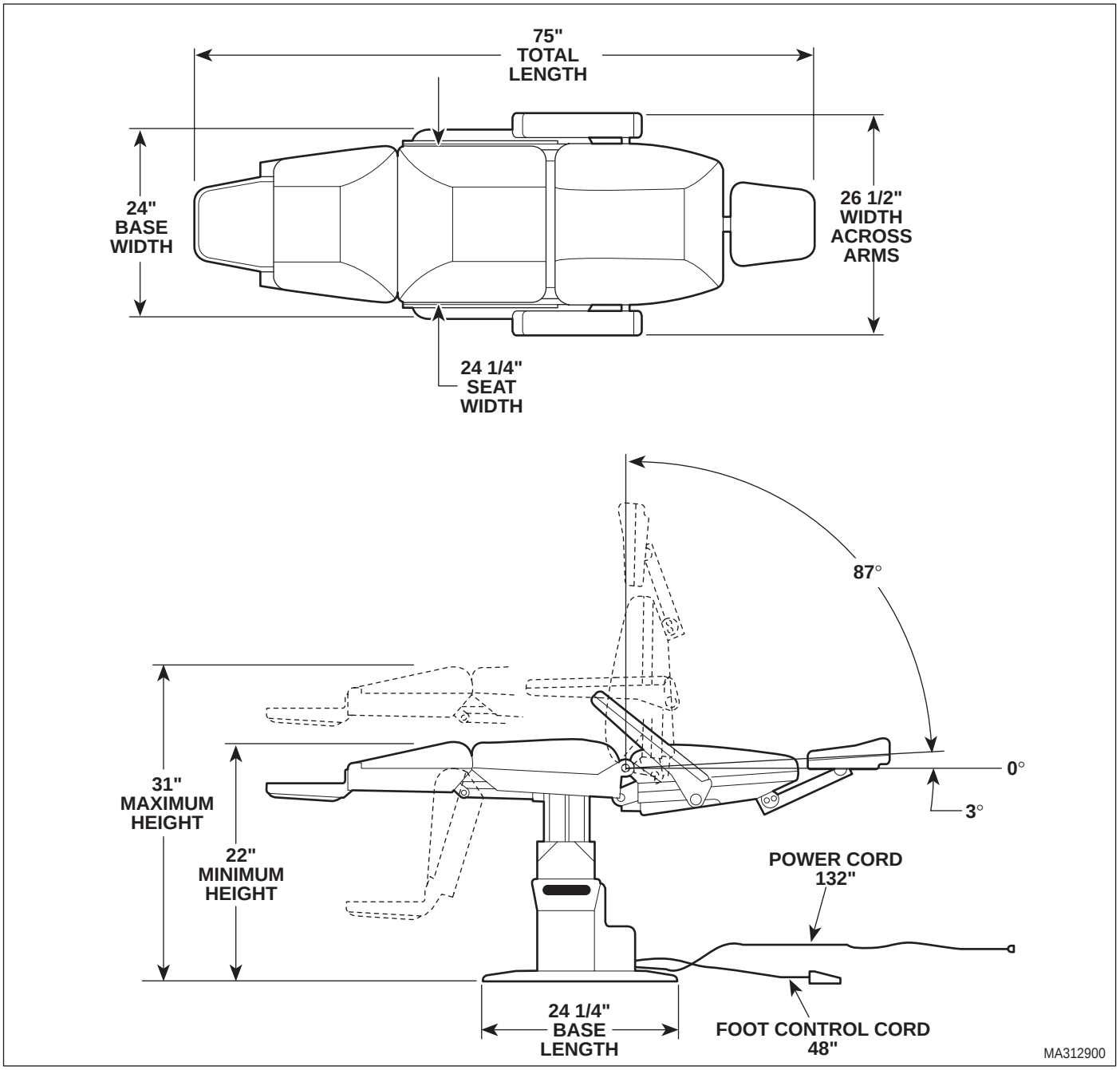

Figure 1-2. Chair Dimensions

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GENERAL INFORMATION

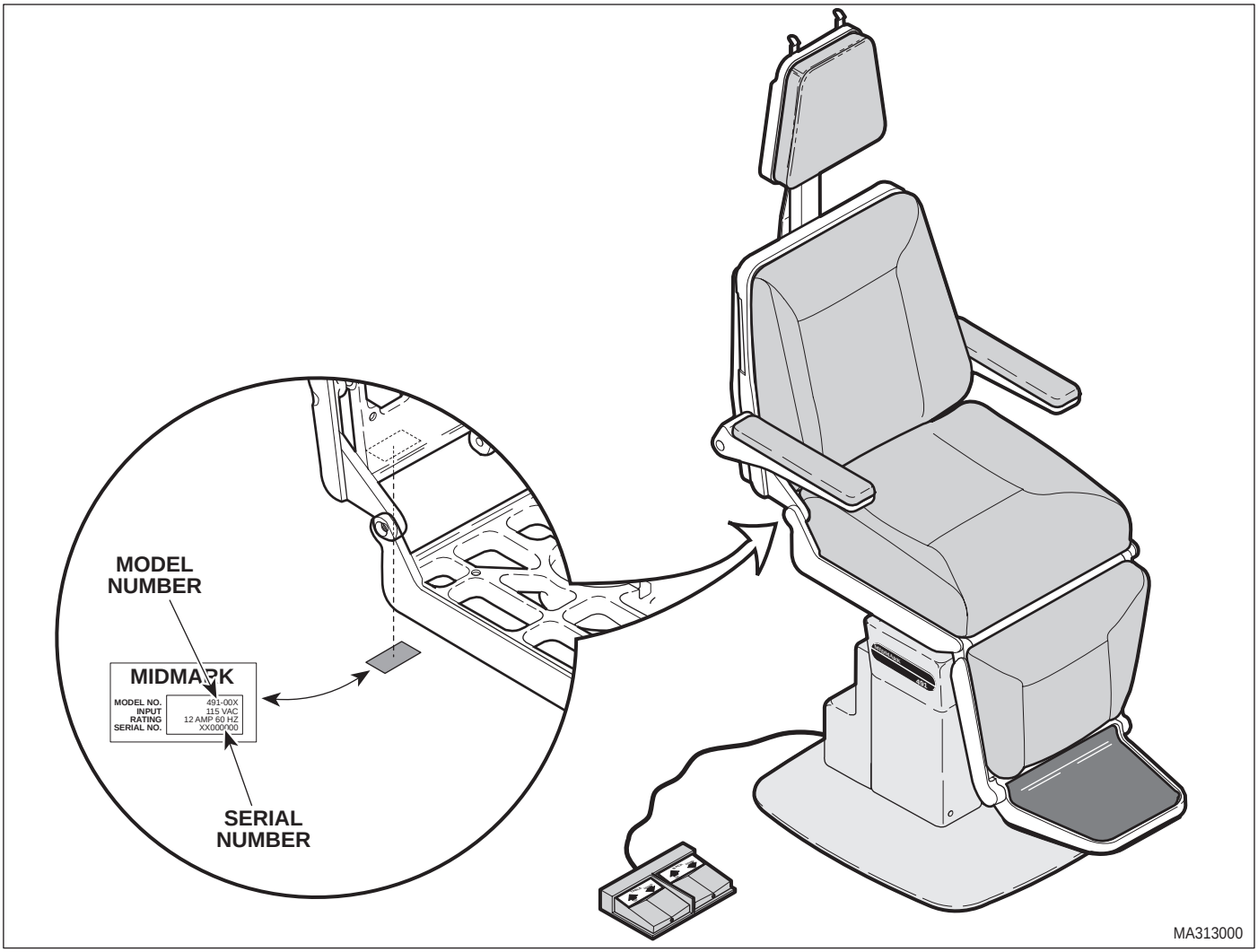

Figure 1-3. Model Number / Serial Number Location

(3) Determine the installation date of the chair and record this data.

(4) Call Midmark with the recorded information and ask for the Medical Products Technical Services Department. See back cover of this manual for the phone number or use the Fax Order Form (See page 7-2 for Fax Order Form).

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1.6 Special Tools

Table 1-2 lists all of the special tools needed to repair the chair, how to obtain the special tools, and the purpose of each special tool.

Table 1-2. Special Tool List

Description of Special Tool	Manufacturer's Name / Address / Phone	Manufacturer's Part Number	Purpose of Special Tool
Multimeter	Commercially Available	Any Type	Used to perform continuity and voltage checks.
Torque Wrench	Commercially Available	Any Type	Used to tighten nuts or screws to specified values.
Amp Extraction Tool	Can be purchased from any authorized Amp distributor.	458994-2	Used to remove terminal sockets from amp connectors.

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SECTION II
TESTING AND TROUBLESHOOTING

2.1 Operational Test

In order to effectively diagnose the malfunction of the chair, it may be necessary to perform an operational test as follows:

WARNING
Refer to the Operator Manual for complete instructions on operating the chair. Failure to do so could result in personal injury.

NOTE
The Operational Test, for the most part, only describes what should happen when the chair is operated. If the chair does something other than described, a problem has been discovered. Refer to the Troubleshooting Guide to determine the cause of the problem and its correction.

(1) Plug the chair into a grounded, non-isolated, correctly polarized outlet, that has the proper voltage output for the chair.

(2) Press BACK UP, BACK DOWN, BASE UP, and BASE DOWN buttons on one of membrane switch panels.

(3) Observe. The table top should move in the direction corresponding to the button which is being depressed. No section of the table top should drift on its own after membrane switch panel button is released. No actuator assembly should make excessive squealing noises. Movement should be steady and should match the speeds and positions listed below:

Chair Speeds (@ 60 Hz.):
Back Down (Up to Down) ..... 11 +/- 1 seconds
Base Up (Down To Up) ..... 12 +/-1 seconds

Chair Positioning
Back Section ..... 2 to 90°
Table Top Height (Adjustable): ..... 22.0 in. to 31.0 in.
(55.9 cm to 78.7 cm)

(4) Repeat steps 2 and 3 on the other membrane switch panel. If the chair has a foot control, repeats steps 2 and 3 for these controls also.

(5) Raise BASE UP function all the way up and BACK DOWN function all the way down.

(6) Press the AUTO RETURN button, wait one second, and then press the STOP button.

(7) Observe. The BASE DOWN and BACK UP functions should begin to run. When the STOP button is pressed, the base and back functions should stop running.

(8) Press the AUTO RETURN button again.

(9) Observe. The base actuator should lower the table top all the way down. The base actuator should not continue to run after table top is completely lowered. The back actuator should raise the back section all the way up. The back actuator should not continue to run after back section is raised all the way up.

(10) Unlock the pivot brake lever and rotate the table top as far as it will go to the left and then to the right.

(11) Observe. The table top should be able to be rotated for approximately 330° of rotation. Excessive force should not be required to rotate table top and there should not be squealing or grinding noises coming from the pivot point.

(12) Lock the brake lever.

(13) Push on table at various points of the table top.

(14) Observe. The column assembly should not have excessive play.

(15) Unlock locking handle, position headrest in a horizontal position as shown, and then relock locking handle.

(16) Place a 45 lb (20.4 kg) static load at Point A.

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SECTION II
TESTING AND TROUBLESHOOTING

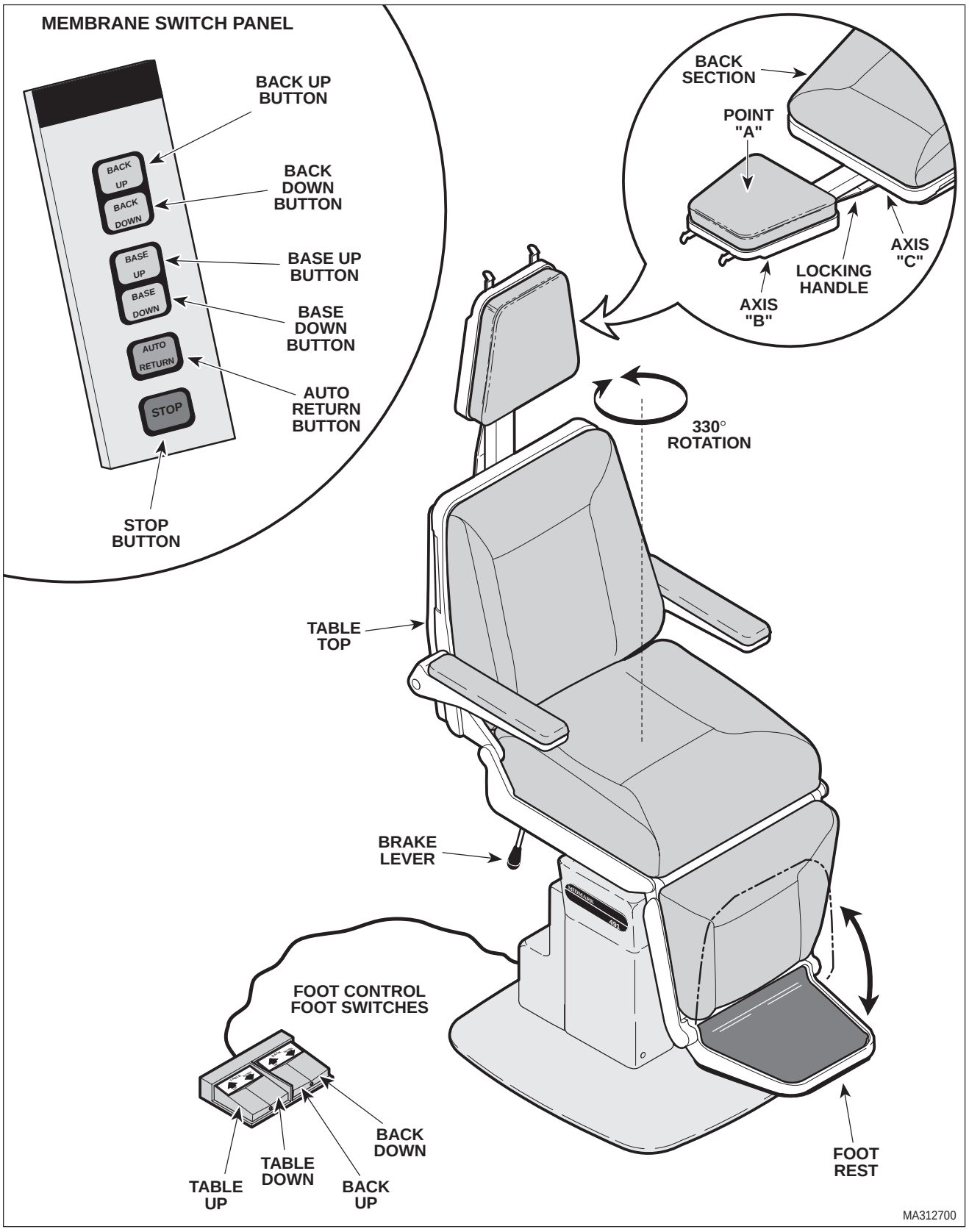

Figure 2-1. Operational Test

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(17) Observe. There should be no movement at axis B or Axis C when the static load is applied to the headrest. The maximum force required to unclamp a locking handle should be 17 lbs. (7.7 kg) and the maximum force required to clamp a locking handle should be 35 lbs. (15.8 kg).

(18) Raise foot rest up to stowed position.

(19) Observe. The foot rest should not fall down on its own; it should stay locked in the stowed position.

2.2 Troubleshooting Procedures

Table 2-1 is a Troubleshooting Guide which is used to determine the cause of the malfunction.

Table 2-1. Troubleshooting Guide

Problem	Symptom	Probable Cause	Check	Correction
Chair will not operate when any of the four up or down or auto return functions are selected from the membrane switch panels.	When any button is pressed, nothing happens (actuator motor(s) does not run or hum).	Power cord is not plugged into facility wall outlet.	Check to see if power cord is plugged in.	Plug power cord into facility wall outlet.
		Facility circuit breaker providing power to chair is tripped.	Check to see if facility circuit breaker is tripped. One way of checking this is to plug a lamp into wall outlet that chair was plugged into.	If circuit breaker is tripped, determine what caused circuit breaker to trip, correct the problem, and then reset / replace circuit breaker.
		Wire connections loose.	Check all wiring connections from power cord to PC control board. Perform continuity check on wires. Use multimeter to check for proper voltage levels.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		0.25 amp transformer primary fuse on PC control board is blown.	Refer to Figure 5-1 or 5-2 for this check. Perform continuity check on primary fuse.	Replace blown primary fuse.
		PC control board is malfunctioning.	Replace suspect PC control board with known working PC control board or use diagnostic L.E.D. chart (Table 5-1) to determine location of malfunction.	Replace PC control board. Refer to para 4.4. If PC control board is not receiving proper inputs per Table 5-1, replace interface board Refer to para 4.3.
	Nothing happens when a membrane button is pressed, but chair runs when a foot control foot switch is depressed.	Interface board is malfunctioning.	Replace suspect interface board with known working interface board.	Replace interface board. Refer to para 4.3.
		PC control board is malfunctioning.	Replace suspect PC control board with known working PC control board or use diagnostic L.E.D. chart (Table 5-1) to determine location of malfunction.	Replace PC control board. Refer to para 4.4. If PC control board is not receiving proper inputs per Table 5-1, replace interface board Refer to para 4.3.

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SECTION II
TESTING AND TROUBLESHOOTING

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
One or more functions cannot be initiated from a membrane switch panel.	Some functions may be initiated from a membrane switch panel, but at least one may not. All functions can be initiated from the other membrane switch panel.	One of the button membranes on the membrane switch panel is malfunctioning.	Refer to Table 5-1 for this check. Press each button of membrane switch panel to verify that each button causes the appropriate L.E.D.'s on PC control board to illuminate.	If appropriate L.E.D's illuminate for each button, replace PC control board. Refer to para 4.4. If not, replace membrane switch panel. Refer to para 4.2.
		Interface board is malfunctioning.	Replace suspect interface board with known working interface board.	Replace interface board. Refer to para 4.3.
One or more functions cannot be initiated from the optional foot control.	Some functions may be initiated from the foot control, but at least one may not. All functions can be initiated from the membrane switch panel.	Foot switch for non-operable function is malfunctioning.	Perform a continuity check on suspect foot switch.	Replace foot switch. Refer to para 4.15.
		PC control board is malfunctioning.	Refer to Table 5-1 and Figure 5-3 for this check. Depress each foot switch on foot control to verify that each footswitch causes the appropriate L.E.D.'s on PC control board to illuminate.	If appropriate L.E.D's illuminate for each foot switch, replace PC control board. Refer to para 4.4. If not, replace malfunctioning foot switch. Refer to para 4.15.
		Wire connections loose.	Check all wiring connections from foot control to PC control board. Perform continuity check on wires. Use multimeter to check for proper voltage levels.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
BACK UP and BACK DOWN functions do not work. All other functions work.	When BACK UP and BACK DOWN buttons are pressed, the chair will not move (all other functions work).	Back capacitor is weak or blown.	Replace suspect back capacitor with known working back capacitor.	Replace back capacitor. Refer to para 4.6 or 4.11.
		Thermal overload switch in back actuator is activated.	-	Wait 10 to 20 minutes to allow back actuator motor to cool.
		5 amp BACK fuse for BACK UP and BACK DOWN functions is blown (located on PC control board).	Refer to Figure 5-1 or 5-2 for this check. Perform a continuity check on 5 amp BACK fuse.	Replace blown BACK fuse.
		Back actuator assembly is malfunctioning.	Replace suspect back actuator assembly with known working back actuator assembly.	Replace actuator motor or back actuator assembly. Refer to para 4.12 or 4.5.
		Wire connections loose.	Check all wiring connections to back actuator assembly.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		PC control board is malfunctioning.	Replace suspect PC control board with known working PC control board.	Replace PC control board. Refer to para 4.4.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
BASE UP and BASE DOWN functions do not work. All other functions work.	When BASE UP and BASE DOWN buttons are pressed, the chair will not move (all other functions work).	Base capacitor is weak or blown.	Replace suspect base capacitor with known working base capacitor.	Replace base capacitor. Refer to para 4.10 or 4.11.
		Thermal overload switch in base actuator is activated.	-	Wait 10 to 20 minutes to allow tilt actuator motor to cool.
		5 amp BASE fuse for BASE UP and BASE DOWN functions is blown (located on PC control board).	Refer to Figure 5-1 or 5-2 for this check. Perform a continuity check on 5 amp BASE fuse.	Replace blown BASE fuse.
		Base actuator assembly is malfunctioning.	Replace suspect base actuator assembly with known working base actuator assembly.	Replace actuator motor or base actuator assembly. Refer to para 4.12 or 4.8.
		Wire connections loose.	Check all wiring connections to base actuator assembly.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		PC control board is malfunctioning.	Replace suspect PC control board with known working PC control board.	Replace PC control board. Refer to para 4.4.
BACK UP function works, but BACK DOWN function does not or BACK DOWN function works, but BACK UP function does not. All other functions work.	One function operates properly, but the other does not.	Wire connections loose.	Check all wiring connections to back actuator assembly.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Back actuator assembly is malfunctioning.	Replace suspect back actuator assembly with known working back actuator assembly.	Replace actuator motor or back actuator assembly. Refer to para 4.12 or 4.5
		PC control board is malfunctioning (relay for up or down function is malfunctioning).	Refer to Figure 5-3 for this check. Press BACK UP and then BACK DOWN button while observing the PC control board. The BACK UP RELAY L.E.D. should illuminate when the BACK UP button is pressed and the BACK DOWN RELAY L.E.D. should illuminate when the BACK DOWN button is pressed. If not, PC control board is malfunctioning.	Replace PC control board. Refer to para 4.4.

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SECTION II
TESTING AND TROUBLESHOOTING

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
BASE UP function works, but BASE DOWN function does not or BASE DOWN function works, but BASE UP function does not. All other functions work.	One function operates properly, but the other does not.	Wire connections loose.	Check all wiring connections to base actuator assembly.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Base actuator assembly is malfunctioning.	Replace suspect base actuator assembly with known working base actuator assembly.	Replace actuator motor or base actuator assembly. Refer to para 4.12 or 4.8.
		PC control board is malfunctioning (relay for up or down function is malfunctioning).	Refer to Figure 5-3 for this check. Press BASE UP and then BASE DOWN button while observing the PC control board. The BASE UP RELAY L.E.D. should illuminate when the BASE UP button is pressed and the BASE DOWN RELAY L.E.D. should illuminate when the BASE DOWN button is pressed. If not, PC control board is malfunctioning.	Replace PC control board. Refer to para 4.4.
AUTO RETURN function does not work.	When AUTO RETURN button is pressed, nothing happens.	AUTO RETURN button on membrane switch panel is malfunctioning.	Refer to Table 5-1 and Figure 5-3 for this check. Press AUTO RETURN button of membrane switch panel and verify that the button causes the appropriate L.E.D.'s on PC control board to illuminate.	If appropriate L.E.D's illuminate for each button, replace PC control board. Refer to para 4.4. If not, replace membrane switch panel. Refer to para 4.2.
		Interface board is malfunctioning.	Replace suspect interface board with known working interface board.	Replace interface board. Refer to para 4.3.
		The STOP button on membrane switch panel is malfunctioning (stuck closed).	Refer to Figure 5-3 for this check. If data line #1, #2, and #3 L.E.D.'s are all illuminated even though STOP button is not being pressed, membrane switch panel is malfunctioning.	Replace membrane switch panel. Refer to para 4.2.
	When AUTO RETURN button is pressed, BACK UP function does not run, but BASE DOWN function does.	Back up limit switch is malfunctioning (stuck open).	Perform continuity check on back up limit switch. Limit switch tripped = continuity between COM. and N.O. terminals.	Replace back up limit switch. Refer to para 4.14.
		Older units - back bypass switch (SW1), located on PC control board, is pushed in. Newer units - jumper connector is on both SW1 pins on PC control board.	Refer to Figure 5-3 for this check. On older units, check to see if bypass switch (SW1) is pushed in. On newer units, check to see if jumper connector is on both SW1 pins.	On older units, pull bypass switch (SW1) to out position. On newer units, remove the jumper connector from SW1 pins and discard.
		PC control board is malfunctioning.	Refer to Figure 5-3 for this check. After AUTO RETURN button is pressed, the auto return back function L.E.D. should illuminate and stay illuminated until the back section is all the way up.	If not, replace PC control board. Refer to para 4.4. If L.E.D. does illuminate, replace interface board. Refer to para 4.3.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
AUTO RETURN function does not work - Continued.	When AUTO RETURN button is pressed, BASE DOWN function does not run, but BACK UP function does.	Base down limit switch is malfunctioning (stuck open).	Perform continuity check on base down limit switch. Limit switch tripped = continuity between COM. and N.O. terminals.	Replace base down limit switch. Refer to para 4.13.
		PC control board is malfunctioning.	Refer to Figure 5-3 for this check. After AUTO RETURN button is pressed, the auto return base function L.E.D. should illuminate and stay illuminated until the table top is all the way down.	If not, replace PC control board. Refer to para 4.4. If L.E.D. does illuminate, replace interface board. Refer to para 4.3.
	When AUTO RETURN button is pressed, BACK UP function stops at its end of travel, but BASE DOWN function continues to run for an additional 7 to 15 seconds.	Base down limit switch is malfunctioning (stuck open).	Perform continuity check on base down limit switch. Limit switch untripped = no continuity between COM. and N.O. terminals.	Replace base down limit switch. Refer to para 4.13.
		Base column rollers out of adjustment resulting in open limit switch.	Adjustment of base column rollers.	Perform Column Eccentric Tire Adjustment. Refer to para 4.20.
		PC control board is malfunctioning.	Replace suspect PC control board with known working PC control board.	Replace PC control board. Refer to para 4.4.
	When AUTO RETURN button is pressed, BASE DOWN function stops at its end of travel, but BACK UP function continues to run for an additional 7 to 15 seconds.	Back up limit switch is malfunctioning (stuck closed).	Perform continuity check on back up limit switch. Limit switch untripped = no continuity between COM. and N.O. terminals.	Replace back up limit switch. Refer to para 4.14.
		PC control board is malfunctioning.	Replace suspect PC control board with known working PC control board.	Replace PC control board. Refer to para 4.4.
The base and back function drifts by itself.	Function operates properly otherwise.	Motor actuator brake is malfunctioning.	Replace suspect actuator brake components with new components.	Replace actuator brake components. Refer to para 4.12.

SECTION II
TESTING AND TROUBLESHOOTING

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
Chair moves fine for light patient, but will not move or moves slowly for very heavy patient.	Heavy patients cause chair to malfunction.	Low voltage is being supplied to chair.	Check voltage at wall receptacle - should be 115 +/- 5 VAC for domestic units and 230 +/- 10 VAC for export units.	Correct low voltage situation at wall receptacle.
		Chair overloaded with too heavy of a patient.	Maximum weight capacity of chair is 300 lbs (136.0 kg).	Inform chair operator of weight limitation.
		Capacitor for suspect function is weak.	Replace suspect capacitor with known working capacitor.	Replace capacitor.
Whirling or squeaking noise is heard when an actuator assembly is being run.	Noisy actuator.	Foreign matter on ball screw threads and / or lack of lubricant.	Check for foreign matter on ball screw threads. Check for lack of lubricant on ball screw threads.	Clean all foreign matter off of ball screw threads. Coat ball screw threads with STP treatment oil or equivalent. If actuator assembly is still noisy, replace it.
Excessive sideways play of table top.	Table top is not stable and can be moved from side to side.	Eccentric tires are out of adjustment.	While observing the eccentric tires, run BASE UP function all the way up and then the BASE DOWN function all the way down. Any eccentric tires which do not come into contact with the inner column and rotate at least once during the full extension and retraction of the column assembly, need adjusted.	Adjust eccentric tires. Refer to para 4.20.
Headrest is not operating properly.	Headrest drifts downward while supporting patients head.	Headrest is out of adjustment.	Check adjustment of headrest.	Adjust headrest. Refer to para 4.18.
	Headrest locking handles pop out of locked position.	Headrest handles handle stops need adjusted.	Check adjustment of headrest handles handle stops.	Adjust headrest handles handle stops. Refer to para 4.19.
Table top rotation is not working.	When table top is rotated, squealing noise is made and / or excessive force is required to rotate the table top.	Thrust bearing is worn or damaged.	Replace suspect thrust bearing with known working thrust bearing.	Replace thrust bearing. Refer to para 4.7.
	The table top is rotating even though the pivot brake lever is in locked position.	Chair rotational lock mechanism is out of adjustment.	Check adjustment of the chair rotational lock mechanism.	Adjust the chair rotational lock mechanism. Refer to para 4.17.
Foot rest will not lock into stowed position.	When foot rest is raised into stowed position, it falls down by itself.	Ball plungers are out of adjustment.	Check the adjustment of the ball plungers.	Adjust the ball plungers. Refer to para 4.21.

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SECTION III
SCHEDULED MAINTENANCE

3.1 Scheduled Maintenance

Table 3-1 is a Scheduled Maintenance Chart which lists the inspections and services that should be performed periodically on the chair. These inspections and services should be performed as often as indicated in the chart.

Table 3-1. Scheduled Maintenance Chart

Interval	Inspection or Service	What to Do
Semi-annually	Obvious damage	Visually check condition of chair for obvious damage such as: cracks in components, missing components, dents in components, or any other visible damage which would cause chair to be unsafe to operate or would compromise its performance. Repair chair as necessary.
	Fasteners / hardware	Check chair for missing or loose fasteners / hardware. Replace any missing hardware and tighten any loose hardware as necessary.
	Warning and instructional decals	Check for missing or illegible decals. Replace decals as necessary.
	Pivot points / moving parts / accessories	Lubricate all exposed pivot points, moving parts, and accessories with silicone based lubricant.
	Membrane switch panel	Check that all membrane switch buttons work when pressed. If not, replace membrane switch panel. Refer to para 4.2.
	Foot control (optional)	Check that foot control works correctly. Make sure all footswitches operate properly. Replace any malfunctioning footswitches. Refer to para 4.15.
	Auto return function	Check that auto return function works correctly. Ensure each actuator stops running when it reaches its end of travel and does not "freewheel". If necessary, adjust or replace limit switches. Refer to para 4.13 or 4.14.
	Ball screws of actuator assemblies	Extend each actuator assembly and wipe ball screw threads down with a rag to remove foreign matter. Coat as much of the ball screw threads as possible with STP treatment oil or equivalent. Run each actuator assembly to both ends of its travel a couple of times to spread the oil evenly over all of the ball screw threads and then remove excess oil. If oil does not correct a squealing actuator assembly, replace actuator assembly.
	Drifting of actuator assemblies	Check each actuator assembly for drift. Replace actuator assembly brake components as necessary. Refer to para 4.12.
	Arm rests	The arm rest should be parallel to the seat section when the back section is all the way up. If not, adjust the arm rest height. Refer to para 4.16.
	Chair rotational lock	Move pivot brake lever to the "locked' position and then attempt to rotate the table top. If the table top rotates, adjust the rotational lock mechanism. Refer to para 4.17.
	Table top rotation	Check that table top can be rotated 330 degrees. Rotation should be easy and noiseless. If not, lubricate thrust bearing with vaseline or replace thrust bearing. Refer to para 4.7.
	Excessive play in column assembly	Check that column assembly is stable and does not have excessive side to side play. Observe the eccentric tires while running the BASE function all the way up and all the way down. Any eccentric tires which do not come into contact with the inner column and rotate at least once during the full extension and retraction of the column assembly, need adjusted. If necessary, adjust and / or replace eccentric tires. Refer to para 4.20.
	Headrest	Check that headrest is adjusted properly and will not drift downward on its own under 45 lbs (20.4 kg) of static weight. If necessary, adjust headrest. Refer to para 4.18.
	Electrical receptacle (Domestic units only)	Check that the electrical receptacle is functioning properly. Replace receptacle as necessary.
	Upholstery	Check all upholstery for rips, tears, or excessive wear. Replace cushions as necessary.
	Accessories	Check that all accessories have all of their components and that they function properly. If necessary, repair or replace the accessory.
	Operational Test	Perform an Operational Test to determine if the chair is operating within its specifications (Refer to para 2.1). Replace or adjust any malfunctioning components.

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SECTION IV
MAINTENANCE / SERVICE INSTRUCTIONS

4.1 Introduction

DANGER
Refer to the Operator Manual for complete instructions on operating the chair. Failure to do so could result in personal injury.

NOTE
Perform an operational test on the chair after the repair is completed to confirm the repair was properly made and that *all* malfunctions were repaired.

The following paragraphs contain removal, installation, repair, and adjustment procedures for the chair.

4.2 Membrane Switch Panel Removal / Installation

A. Removal

NOTE
This art shows removal of the membrane switch panel from the patients right side of chair. Removal of membrane switch panel from patients left side of chair is the same.

(1) Raise BACK UP function all the way up.

(2) Remove four screws (1, Figure 4-1) and headrest assembly or headrest block (2) from back casting (3).

(3) If chair has an optional exam light assembly, remove four screws (4) and exam light assembly (5) from light bracket (6).

(4) Remove two short screws (7), two long screws (8), and back cover (9) from back casting (3).

(5) Disconnect ribbon cable of membrane switch panel (1, Figure 4-2) from interface board (2).

(6) Using screwdriver, gently pry membrane switch panel (1) off of back casting (3). Remove membrane switch panel (1) from back casting.

B. Installation

(1) Using warm soapy water, clean back casting (3, Figure 4-2) in area where membrane switch panel (1) is to be installed. Allow to dry.

(2) Feed ribbon cable of membrane switch panel (1) thru cable slot.

(3) Pull paper backing off of membrane switch panel (1); then press membrane switch panel firmly into place on back casting (3).

EQUIPMENT ALERT
Use care not to bend, kink, or crease the ribbon cable of the membrane switch panel. Failure to use care could result in damage to ribbon cable.

(4) Connect ribbon cable of membrane switch panel (1) to interface board (2).

EQUIPMENT ALERT
Overtightening screws (7 and 8) could cause back cover to crack.

NOTE
The shorter screws go on top.

(5) Install back cover (9, Figure 4-1) on back casting (3) and secure with two long screws (8) and two short screws (7). Tighten screws until back cover starts to deform.

(6) If removed, install exam light assembly (5) on light bracket (6) and secure with four screws (4).

(7) If removed, install headrest assembly or headrest block (2) on back casting (3) and secure with four screws (1).

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SECTION IV
MAINTENANCE / SERVICE

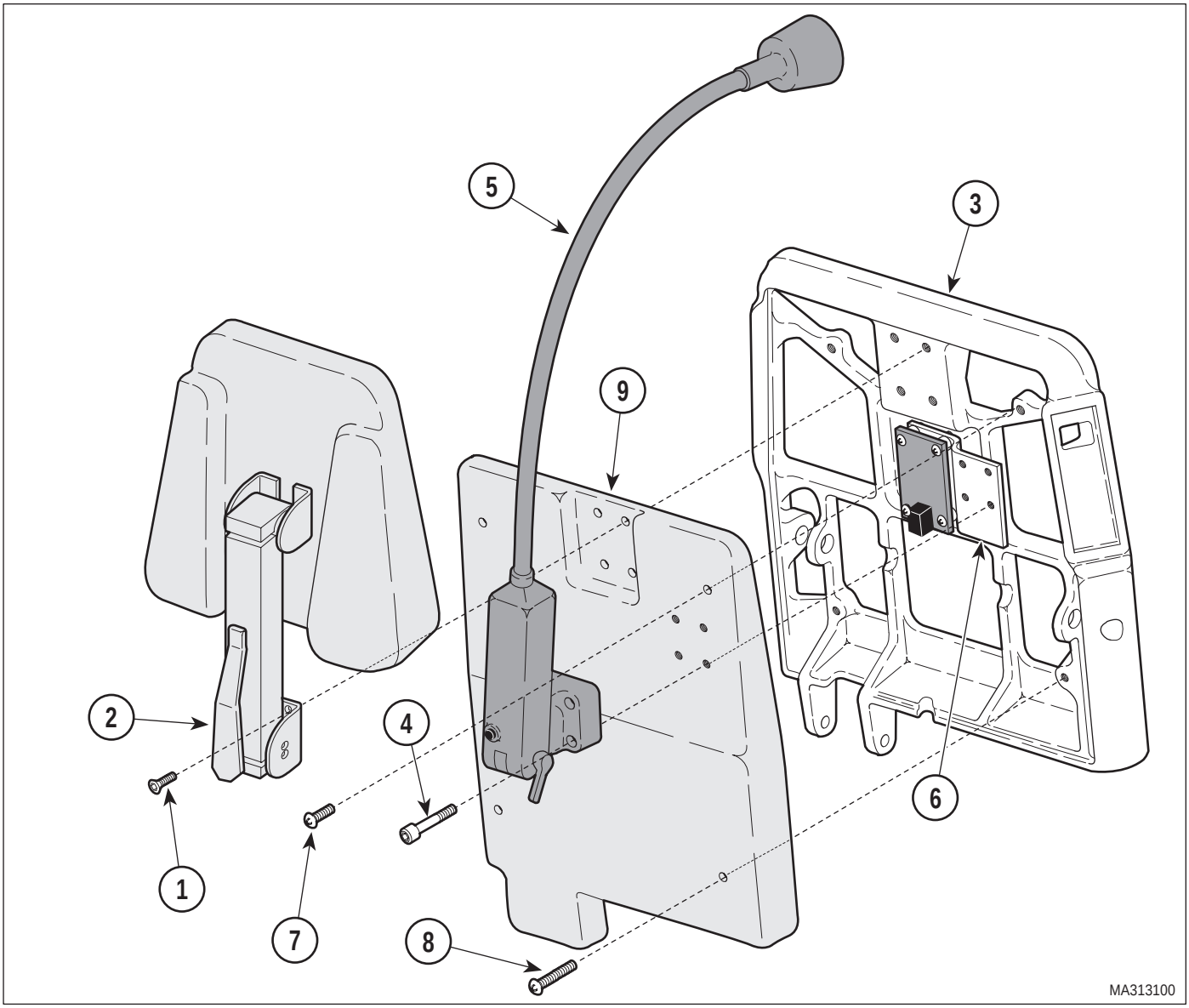

Figure 4-1. Back Cover Removal / Installation

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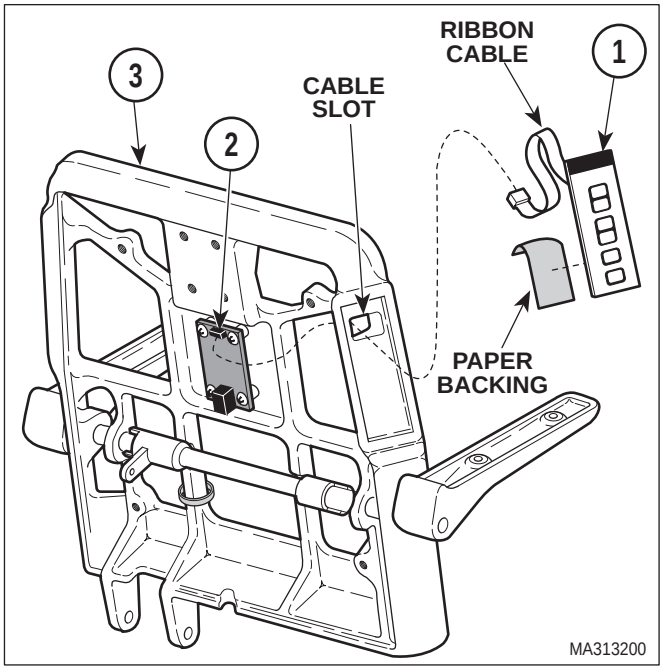

Figure 4-2. Membrane Switch Panel Removal / Installation

4.3 Interface Board Removal / Installation

A. Removal

(1) Raise BACK UP function all the way up.

(2) Remove four screws (1, Figure 4-3) and headrest assembly or headrest block (2) from back casting (3).

(3) If chair has an optional exam light assembly, remove four screws (4) and exam light assembly (5) from light bracket (6).

(4) Remove two short screws (7), two long screws (8), and back cover (9) from back casting (3).

(5) Disconnect two ribbon cables (1, Figure 4-4) from interface board (2).

(6) Disconnect modular cord (3) from interface board (2).

NOTE
Not all units have a light bracket (6).

(7) Remove four screws (4), spacers (5), interface board (2), and light bracket (6) from back casting (7).

B. Installation

(1) Install light bracket (6), four spacers (5, Figure 4-4) and interface board (2) on back casting (7) and secure with four screws (4).

(2) Connect modular cord (3) to interface board (2).

EQUIPMENT ALERT
Use care not to bend, kink, or crease the ribbon cable of the membrane switch panel. Failure to use care could result in damage to ribbon cable.

(3) Connect two ribbon cables (1) to interface board (2).

EQUIPMENT ALERT
Overtightening screws (7 and 8) could cause back cover to crack.

NOTE
The shorter screws go on top.

(4) Install back cover (9, Figure 4-3) on back casting (3) and secure with two long screws (8) and two short screws (7). Tighten screws until back cover starts to deform.

(5) If removed, install exam light assembly (5) on light bracket (6) and secure with four screws (4).

(6) If removed, install headrest assembly or headrest block (2) on back casting (3) and secure with four screws (1).

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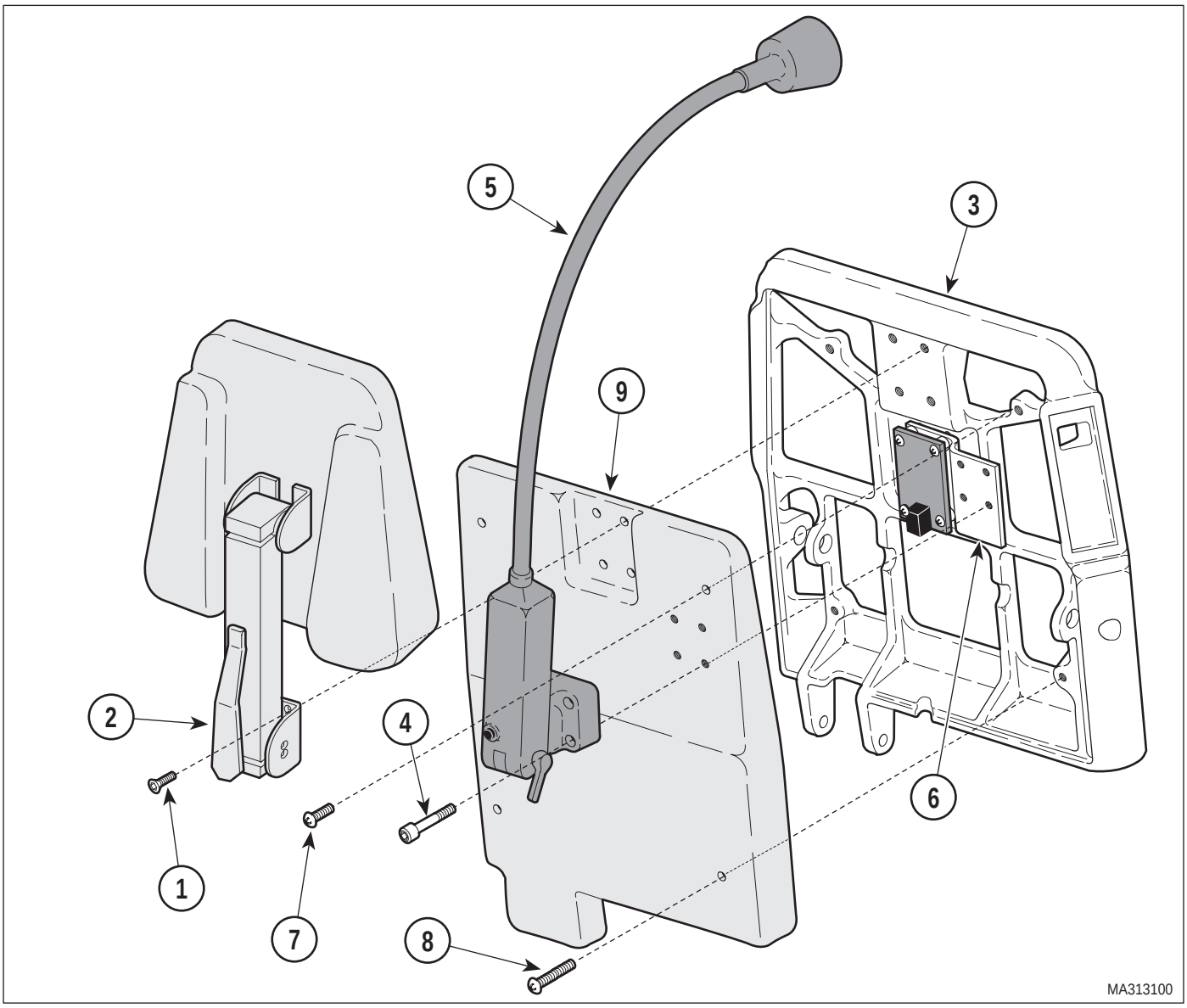

Figure 4-3. Back Cover Removal / Installation

4.4 PC Control Board Removal / Installation

A. Removal

(1) If possible, raise BASE UP function all the way up.

WARNING
Always disconnect the power cord from the wall outlet before removing any of the chair's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(2) Unplug chair power cord from wall outlet.

(3) Remove four screws (1, Figure 4-5), four screws (2), and R.H. and L.H. shrouds (3) from base mounts (4).

NOTE
Older units have a slightly different motor cover than is shown. Removal is similar.

(4) Remove two screws (5), four screws (6), and motor cover (7) from elevation column (8).

(5) Disconnect three wire harnesses (1, Figure 4-6) from PC control board (2).

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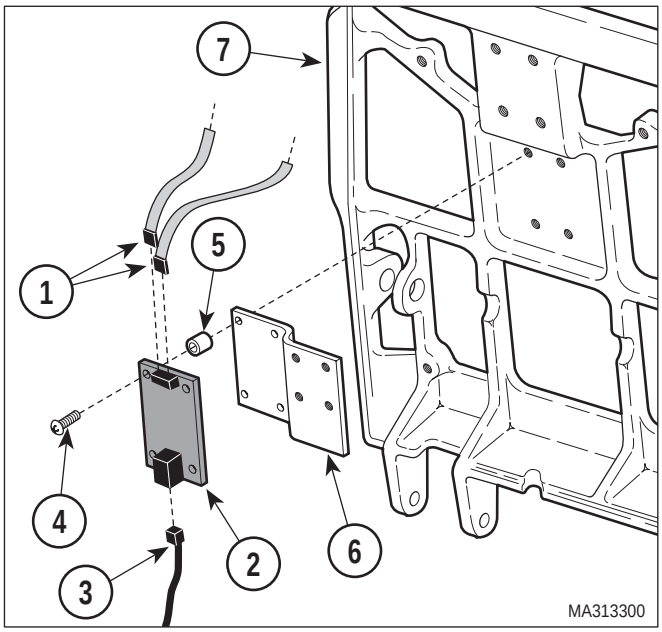

Figure 4-4. Interface Board Removal / Installation

(6) Tag and disconnect two modular cords (3) from PC control board (2).

(7) Loosen five terminal screws (4); then tag and disconnect five wires (5) from PC control board (2).

NOTE
There are two jumper strips which may fall off of terminal strip during disconnection of wires. Do not lose.

(8) Remove four screws (6), spacers (7), and PC control board (2) from elevation column (8).

B. Installation

(1) Install PC control board (2, Figure 4-6) on elevation column (8) and secure with four spacers (7) and screws (6).

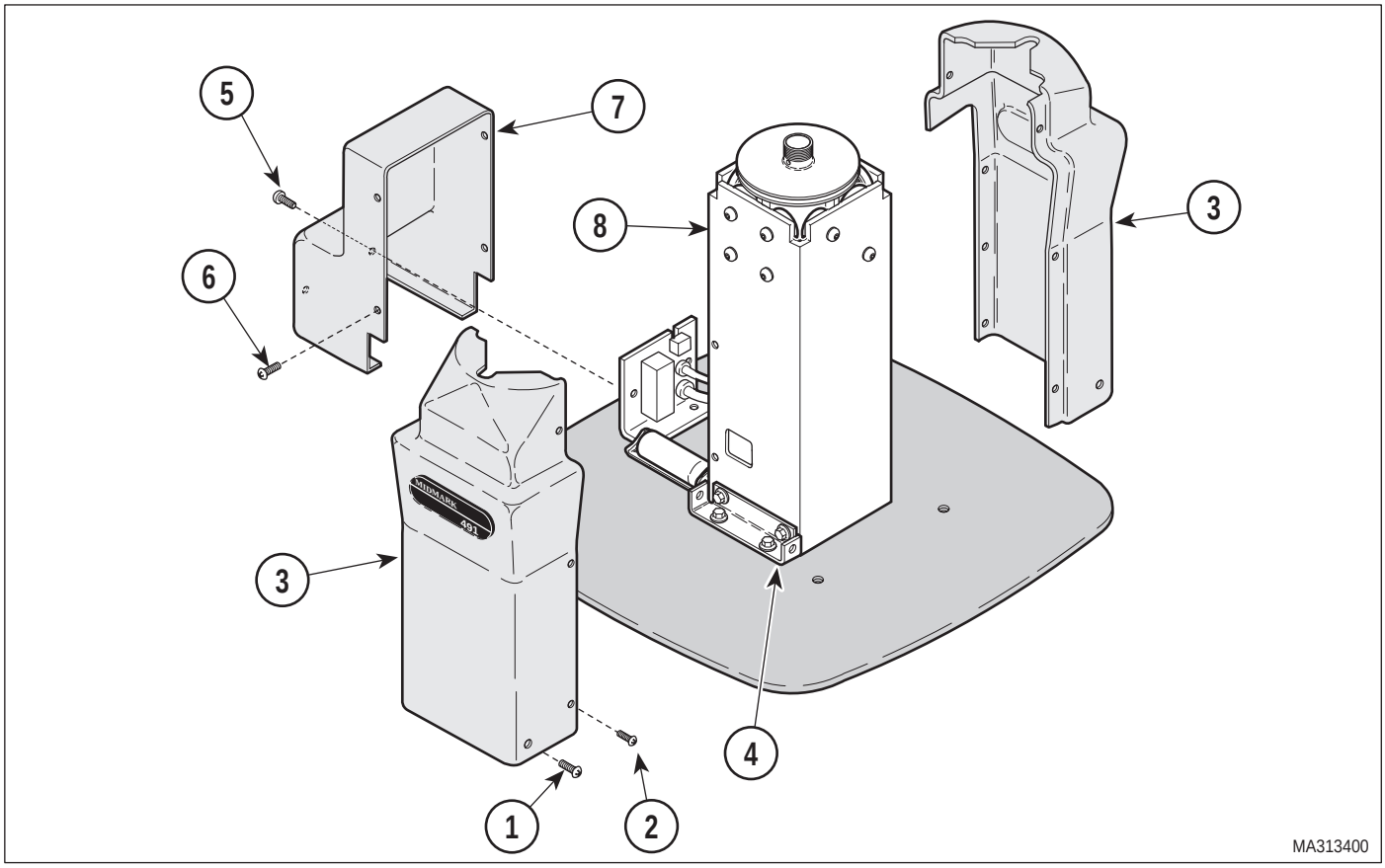

Figure 4-5. Shrouds and Motor Cover Removal / Installation

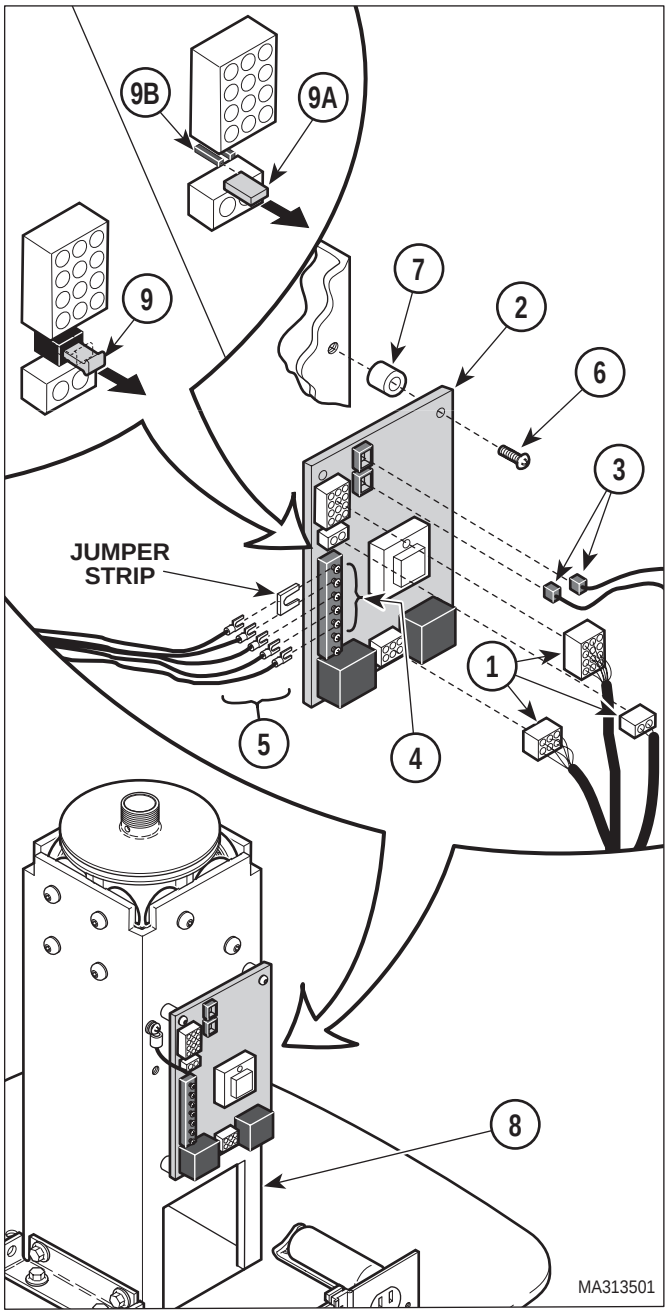

Figure 4-6. PC Control Board Removal / Installation

(2) Make sure two jumper strips are installed on terminal strip and did not fall out during wire disconnection.

(3) Connect five wires (5) to PC control board (2) and secure by tightening five terminal screws (4).

(4) Connect two modular cords (3) to PC control board (2).

(5) Connect three wire harnesses (1) to PC control board (2).

EQUIPMENT ALERT
On older units, SW1 usually gets pushed in when top wire harness is connected. SW1 must be in pulled out position for table to function properly.

(6) On older units, check position of SW1 (9). If SW1 is not in pulled out position, pull SW1 out. On newer units, check to make sure jumper connector (9A) is not installed. If installed, remove jumper connector from SW1 pins (9B).

(7) Install motor cover (7, Figure 4-5) on elevation column (8) and secure with four screws (6) and two screws (5).

(8) Install R.H. and L.H. shrouds (3) on base mounts (4) and secure with four screws (2) and four screws (1).

(9) Plug chair power cord into wall outlet.

4.5 Back Actuator Removal / Installation

A. Removal

WARNING
Always disconnect the power cord from the wall outlet before removing any of the chair's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Unplug chair power cord from wall outlet.

(2) Remove upholstered seat section (1, Figure 4-7) from seat casting (2) and upholstered back section (3) from upholstered back casting (4).

(3) Remove three screws (5) and seat cover (6) from seat casting (2).

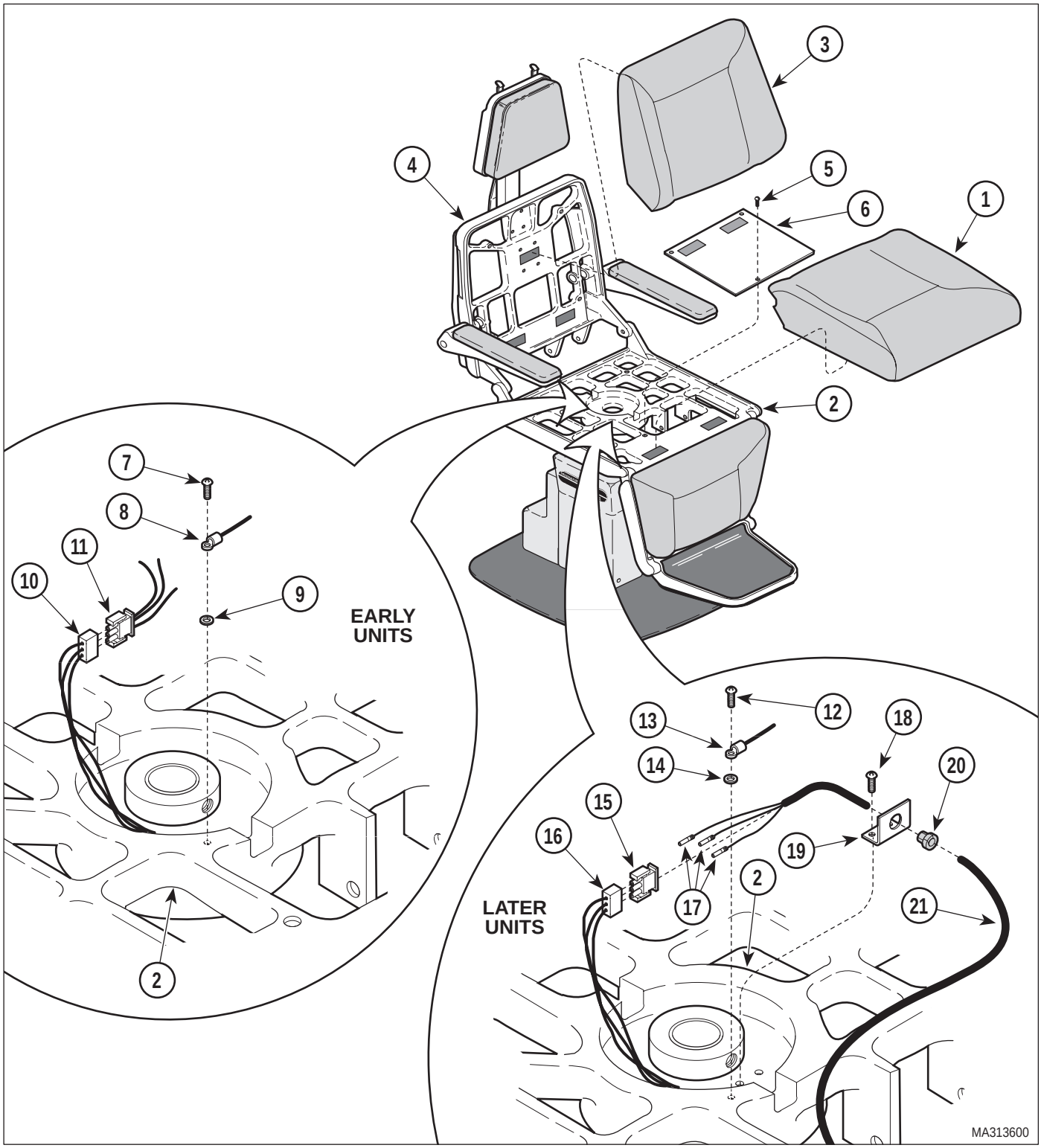

Figure 4-7. Wires Disconnection / Connection

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(4) On chairs with Serial Numbers CT-1000 thru CT-1354 and DG-1000 thru DG-1099, perform the following steps:

a. Remove screw (7), ground wire (8), and star washer (9) from seat casting (2).

b. Disconnect wire harness (10) from wire harness (11).

(5) On chairs with Serial Numbers CT-1355 thru Present and DG-1100 thru Present, perform the following steps:

a. Remove screw (12), ground wire (13), and starwasher (14) from seat casting (2).

b. Disconnect wire harness (15) from wire harness (16).

NOTE
If back actuator is being discarded, its three wires can be cut. If the back actuator is being removed for repair, an amp tool must be used or damage to socket terminals will result.

c. Using an amp tool, push three socket terminals (17) from plug (15). See Table 1-2 for special tool.

d. Remove two screws (18) and strain relief bracket (19) from seat casting (2).

e. Remove strain relief bushing (20) from strain relief bracket (19).

f. Pull back actuator wires (21) from strain relief bracket (19).

g. Remove strain relief bushing (20) from back actuator wires (21).

(6) Cut cable tie (1, Figure 4-8) securing limit switch wires (2) to shaft of back actuator (3).

(7) Remove two screws (4), lockwashers (5), and separate limit switch bracket (6) from shaft of back actuator (3).

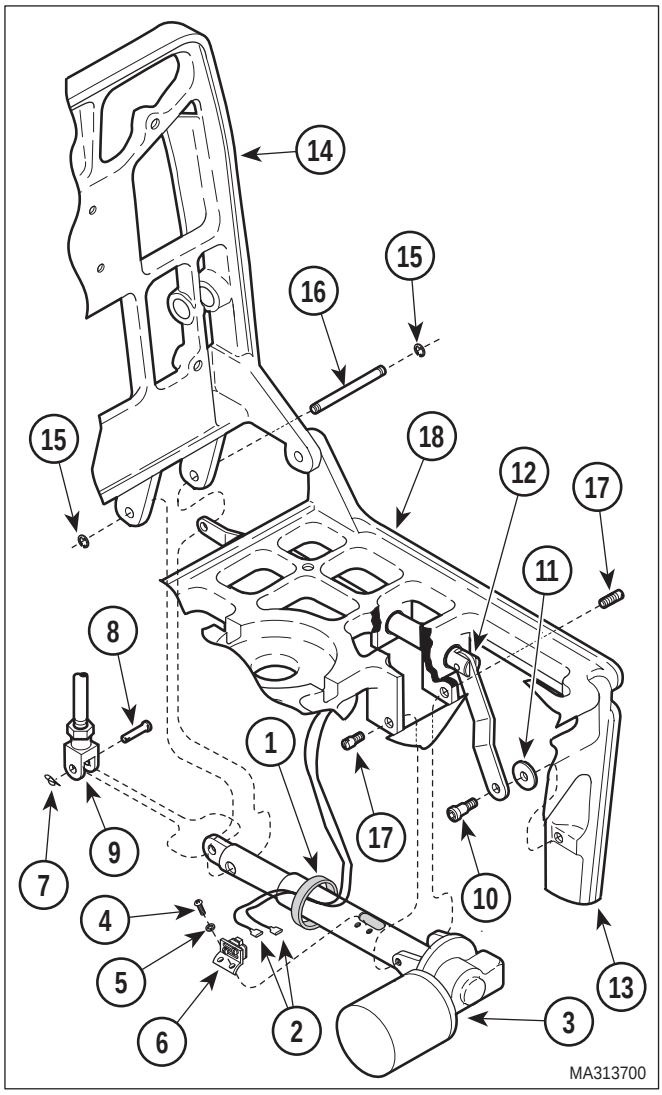

Figure 4-8. Back Actuator Removal / Installation

CAUTION
Push arm rests out of the way or support them while removing clevis pin. The arm rest will be free to fall, possibly resulting in minor injury to technician.

(8) Remove rue ring cotter pin (7) and clevis pin (8) securing linkage assembly (9) to shaft of back actuator (3).

(9) Remove screw (10) and washer (11) securing push rod assembly (12) to leg casting (13).

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(10) While supporting back casting (14), remove two e-rings (15) and clevis pin (16) securing shaft of back actuator (3) and push rod assembly (12) to back casting (14).

(11) While supporting back casting (14), slide push rod assembly (12) toward back of chair and then remove two screws (17) and back actuator (3) from seat casting (18).

B. Installation

EQUIPMENT ALERT
On newer units, do not attempt to install plug onto three socket terminals at this time. Must be done later in procedure.

(1) Install back actuator (3, Figure 4-8) on seat casting (18) and secure with two screws (17).

(2) Align shaft of back actuator (3) and push rod assembly (12) with back casting (14) and secure with clevis pin (16) and two e-rings (15).

(3) Coat threads of screw (10) with removable threadlocking adhesive (Loctite 242).

(4) Align push rod assembly (12) with leg casting (13) and secure with washer (11) and screw (10).

(5) Connect linkage assembly (9) to shaft of back actuator (3) with clevis pin (8) and rue ring cotter pin (7).

(6) Install limit switch bracket (6) on shaft of back actuator (3) and secure with two lockwashers (5) and screws (4).

(7) Secure limit switch wires (2) to shaft of back actuator (3) with a cable tie (1).

(8) On chairs with Serial Numbers CT-1355 thru Present and DG-1100 thru Present, perform the following steps:

a. Feed back actuator wires (21, Figure 4-7) thru strain relief bracket (19).

b. Insert three socket terminals (17) into plug (15).

c. Connect wire harness (15) to wire harness (16).

d. Connect ground wire (13) to seat casting (2) and secure with starwasher (14) and screw (12).

e. Install strain relief bushing (20) on back actuator wires (21) and then into strain relief bracket (19).

f. Install strain relief bracket (19) on seat casting (2) and secure with two screws (18).

(9) On chairs with Serial Numbers CT-1000 thru CT-1354 and DG-1000 thru DG-1099, perform the following steps:

a. Connect wire harness (10, Figure 4-7) to wire harness (11).

b. Install starwasher (9) and ground wire (8) on seat casting (2) and secure with screw (7).

(10) Install seat cover (6) on seat casting (2) and secure with three screws (5).

(11) Install upholstered back section (3) on back casting (4) and upholstered seat section (1) on seat casting (2).

(12) Plug chair power cord into wall outlet.

4.6 Back Capacitor Removal / Installation (Domestic Units Only)

A. Removal

WARNING
Always disconnect the power cord from the wall outlet before removing any of the chair's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Unplug chair power cord from wall outlet.

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(2) Remove upholstered seat section (1, Figure 4-9) from seat casting (2).

(3) Remove three screws (3) and seat cover (4) from seat casting (2).

(4) Remove two nuts (5) and capacitor cover (6) from motor (7).

WARNING
A capacitor contains stored electricity. Never touch terminals of a capacitor, even if power has been shut off or disconnected. Always discharge capacitor before touching capacitor terminals or wires. Failure to comply with these instruction could result in serious personal injury or death.

(5) Discharge capacitor (8).

(6) Tag and disconnect two wires (9) from terminals of capacitor (8). Remove capacitor.

B. Installation

(1) Connect two wires (9) to terminals of capacitor (8).

(2) Position capacitor (8) on motor (7).

(3) Install capacitor cover (6) on motor (7) and secure with two nuts (5).

(4) Install seat cover (4) on seat casting (2) and secure with three screws (3).

(5) Install upholstered seat section (1) on seat casting (2).

(6) Plug chair power cord into wall outlet.

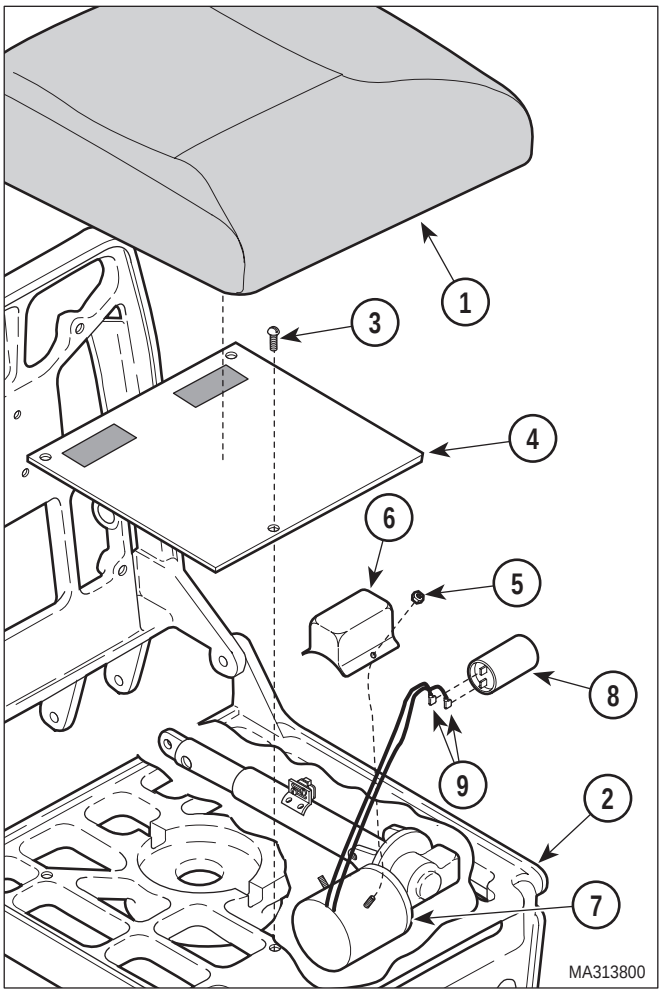

Figure 4-9. Back Capacitor Removal / Installation

4.7 Thrust Bearing Removal / Installation

A. Removal

WARNING
Always disconnect the power cord from the wall outlet before removing any of the chair's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Raise BACK UP function all the way up and lower BASE DOWN function all the way down.

(2) Unplug chair power cord from wall outlet.

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(3) Remove four screws (1, Figure 4-10) and headrest assembly or headrest block (2) from back casting (3).

(4) If chair has an optional exam light assembly, remove four screws (4) and exam light assembly (5) from light bracket (6).

(5) Remove two short screws (7), two long screws (8), and back cover (9) from back casting (3).

(6) Disconnect modular cord (10) from interface board (11).

(7) On older units, cut cable tie (12) securing modular cord (10) to back casting (3). On newer units, remove screw (13) securing cable tie (14) to back casting (3). Cut cable tie.

(8) Remove upholstered seat section (1, Figure 4-11) from seat casting (2).

(9) Remove three screws (3) and seat cover (4) from seat casting (2).

(10) Carefully pull modular cord (5) out of bushing (6).

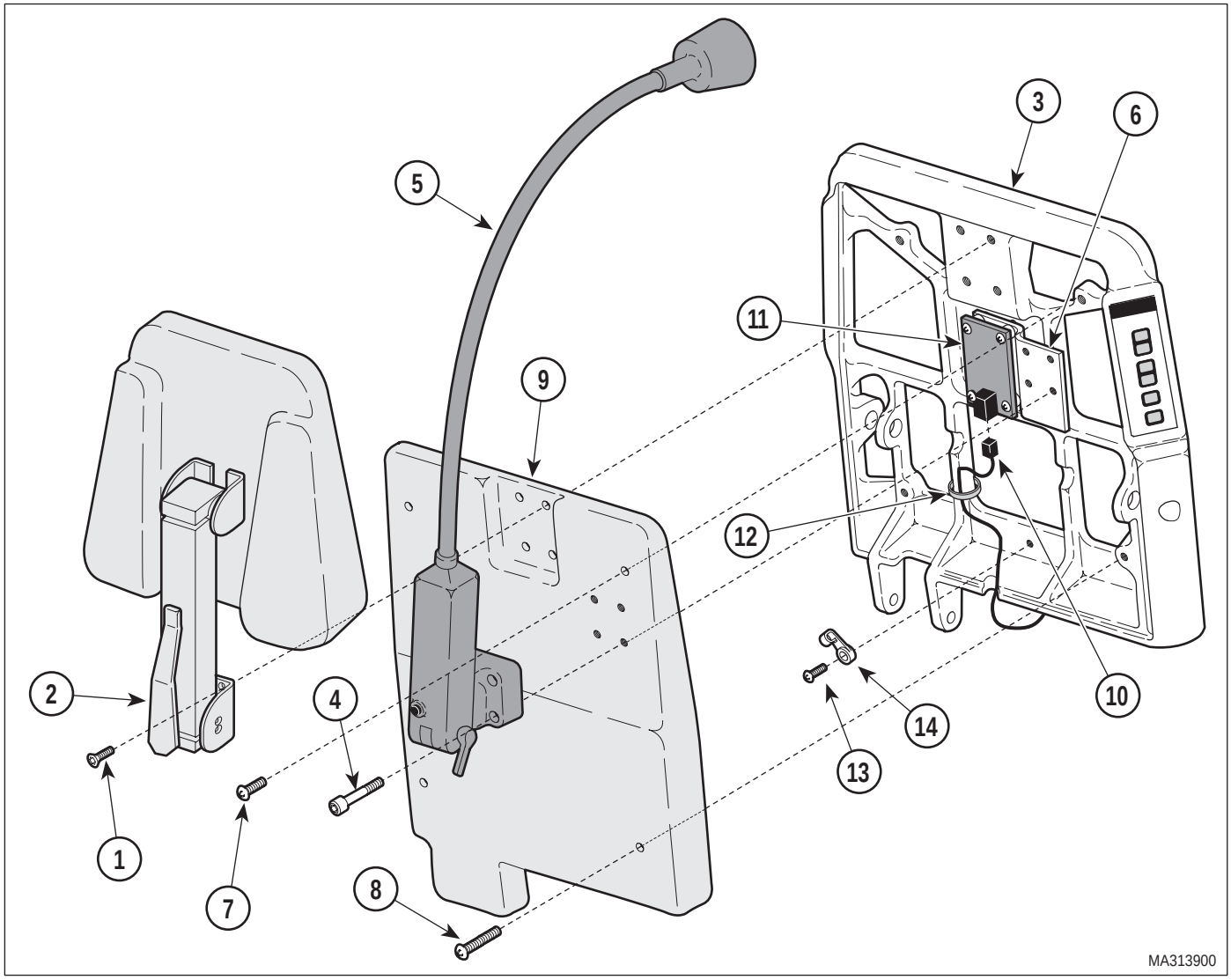

Figure 4-10. Access To Back Section

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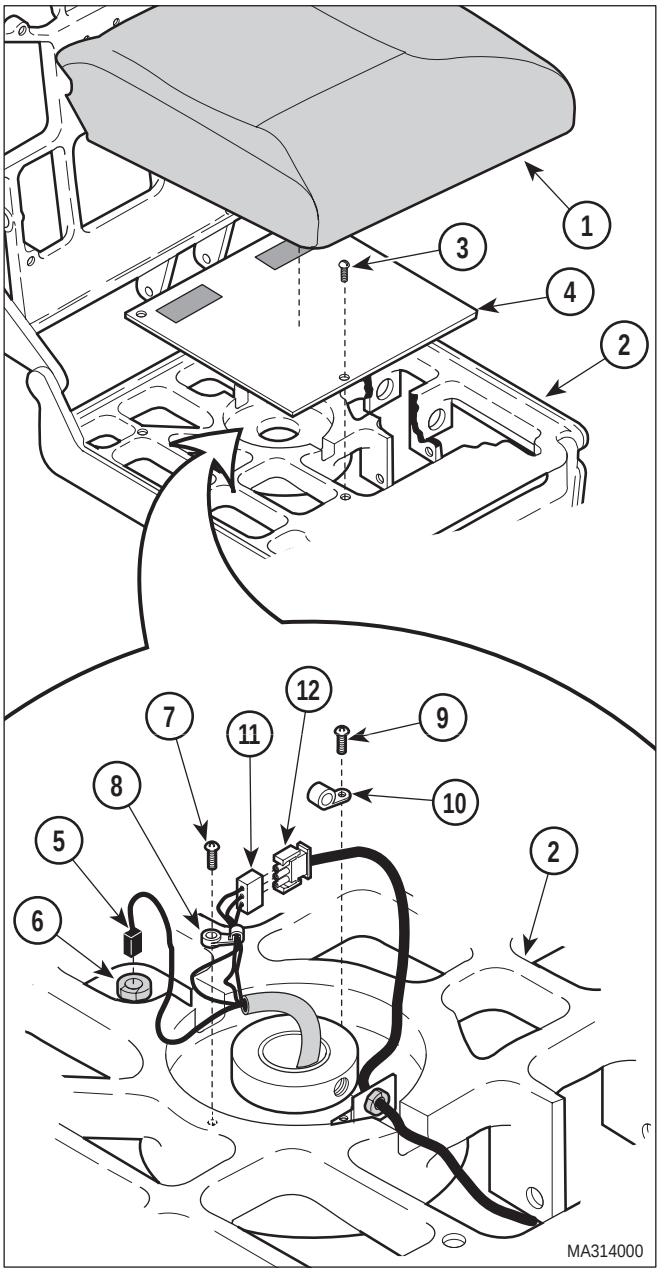

Figure 4-11. Wires Disconnection / Connection

(11) Remove two screws (7) securing cable ties (8) to seat casting (2).

(12) Remove screw (9) securing cable clamp (10) to seat casting (2). Remove cable clamp from wires.

(13) Disconnect wire harness (11) from wire harness (12).

(14) Cut cable tie (1, Figure 4-12) securing two wires (2) from shaft of back actuator (3).

(15) Tag and disconnect two wires (2) from back up limit switch (4).

(16) Using a 1/8 inch Allen Wrench, loosen set-screw (5).

(17) Unscrew seat nut (6) by turning in counter-clockwise direction.

(18) Remove thrust washer (7), thrust bearing (8), and thrust washer (9) from threaded post of slide weldment (10).

B. Installation

EQUIPMENT ALERT
Do not force seat nut if it does not thread on fairly easily. The seat nut will just further damage the fine threads of the slide weldment and could require the slide weldment to be replaced.

(1) Inspect threads of slide weldment (10, Figure 4-12). They are likely to be deformed because of the setscrew. If so, use a 20 threads per inch thread file to clean up the threads.

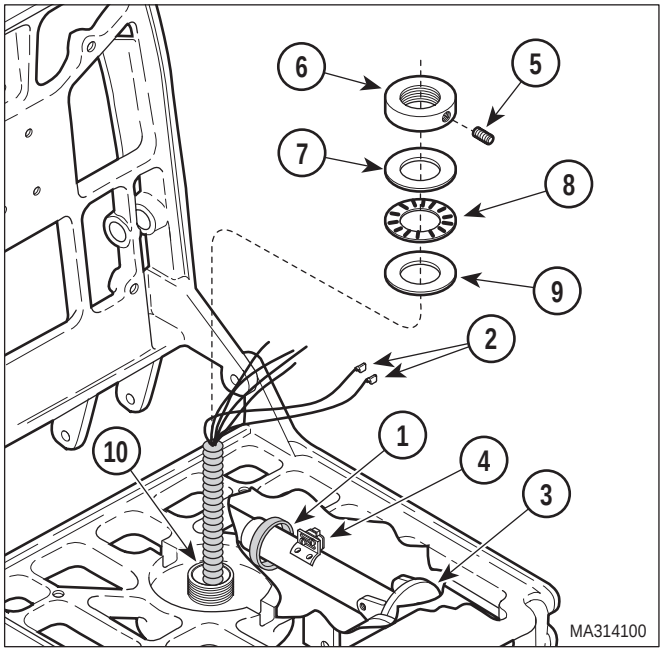

Figure 4-12. Thrust Bearing Removal / Installation

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(2) If re-installing old thrust washers (7 and 9) and thrust bearing (8), clean with solvent. Allow to dry.

(3) Coat thrust washers (7 and 9) and thrust bearing (8) with vaseline.

(4) Coat threads of slide weldment (10) and seat nut (6) with vaseline.

(5) Install thrust washer (9), thrust bearing (8), and thrust washer (7) on slide weldment (10).

NOTE
Seat nut should be installed on slide weldment so its counterbore is facing downward.

(6) Install seat nut (6) on slide weldment (10). Tighten seat nut until no play can be felt when table top is rocked from side to side and table top has a small amount of resistance to being rotated.

(7) Secure seat nut (6) in position by tightening setscrew (5) with 1/8 inch Allen Wrench.

(8) Connect one wire (2) to COM. terminal and the other wire (2) to N.C. terminal of base up limit switch (4).

(9) Secure two wires (2) to shaft of back actuator (3) with a cable tie (1).

(10) Connect wire harness (11, Figure 4-11) to wire harness (12).

(11) Install cable clamp (10) on wires.

(12) Secure cable clamp (10) to seat casting (2) with screw (9).

(13) Secure two cable ties (8) to seat casting (2) with two screws (7).

(14) Feed modular cable (5) thru bushing (6).

(15) Install seat cover (4) on seat casting (2) and secure with three screws (3).

(16) Install upholstered seat section (1) on seat casting (2).

(17) Connect modular cable (10, Figure 4-10) to interface board (11).

(18) On older units, secure modular cord (10) to back casting (3) with cable tie (12).
On newer units, install cable tie (14) on modular cord (10); then secure cable tie (14) to back casting (3) with screw (13).

(19) Install back cover (9) on back casting (3) and secure with two long screws (8) and two short screws (7). Tighten screws until back cover starts to deform.

(20) If removed, install exam light assembly (5) on light bracket (6) and secure with four screws (4).

(21) If removed, install headrest assembly or headrest block (2) on back casting (3) and secure with four screws (1).

(22) Plug chair power cord into wall outlet.

4.8 Base Actuator Removal / Installation

A. Removal

(1) Remove thrust bearing (Refer to para 4.7).

(2) Remove two outside bolts (1, Figure 4-13) and lockwashers (2).

(3) Loosen two inside bolts (3) and remove brake assembly (4) from seat casting (5).

(4) Remove stop (6) from seat casting (5).

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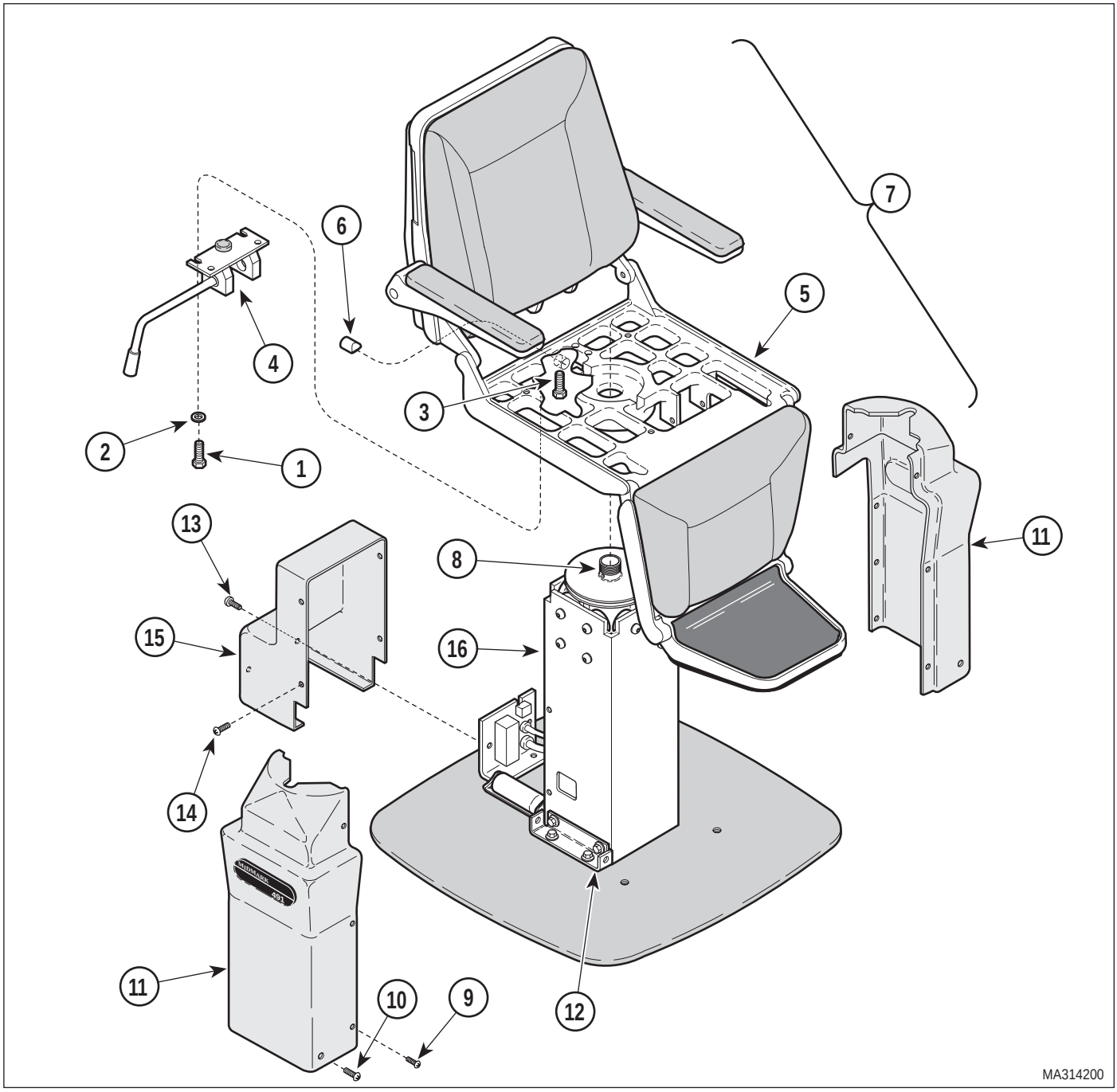

Figure 4-13. Shrouds and Motor Cover Removal / Installation

WARNING
Table top is moderately heavy, but is very bulky to lift. Use an assistant and use proper lifting techniques to lift the table top. Failure to do so could result in back injury.

(5) With the help of an assistant, lift table top (7) straight up off of slide weldment (8).

(6) Remove four screws (9), four screws (10), and R.H. and L.H. shrouds (11) from base mounts (12).

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NOTE
Older units have a slightly different motor cover than is shown. Removal is similar.

(7) Remove two screws (13), four screws (14), and motor cover (15) from elevation column (16).

(8) Disconnect three wire harnesses (1, Figure 4-14) from PC control board (2).

(9) Tag and disconnect two modular cords (3) from PC control board (2).

(10) Loosen five terminal screws (4); then tag and disconnect five wires (5) from PC control board (2).

(11) Remove screw (6), ground wire (7), and star washer (8) from elevation column (9).

(12) Remove screw (10) securing cable tie (11) to base casting (12).

NOTE
There are two jumper strips which may fall off of terminal strip during disconnection of wires. Do not lose.

(13) Remove four screws (13), spacers (14), and PC control board (2) from elevation column (9).

(14) Remove pin (1, Figure 4-15), spacer (2), and rubber washer (3), securing shaft of base actuator (4) to slide weldment (5).

(15) Remove four screws (6) securing elevation column (7) to base casting (8).

(16) Lift elevation column (7) off of base actuator (4) and lay elevation column on base casting (8).

(17) Disconnect two capacitor wires (9) from two T-taps (10).

(18) Tag and remove two T-taps (10) from base actuator wires (11).

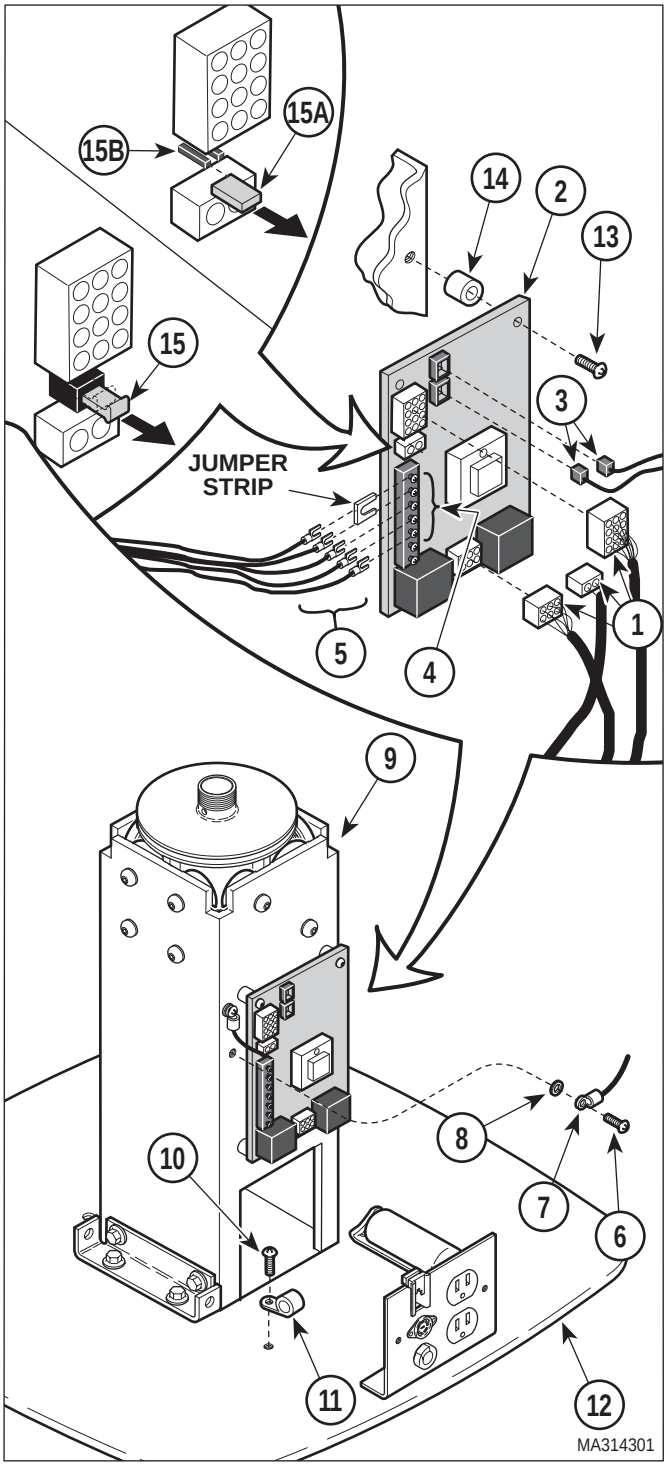

Figure 4-14. Wires Disconnection / Connection

(19) Using amp tool, tag and remove three base actuator wires (11) from connector (12). If amp tool is not available, forcibly pull wires from connector (12). Refer to Table 1-2 for special tool.

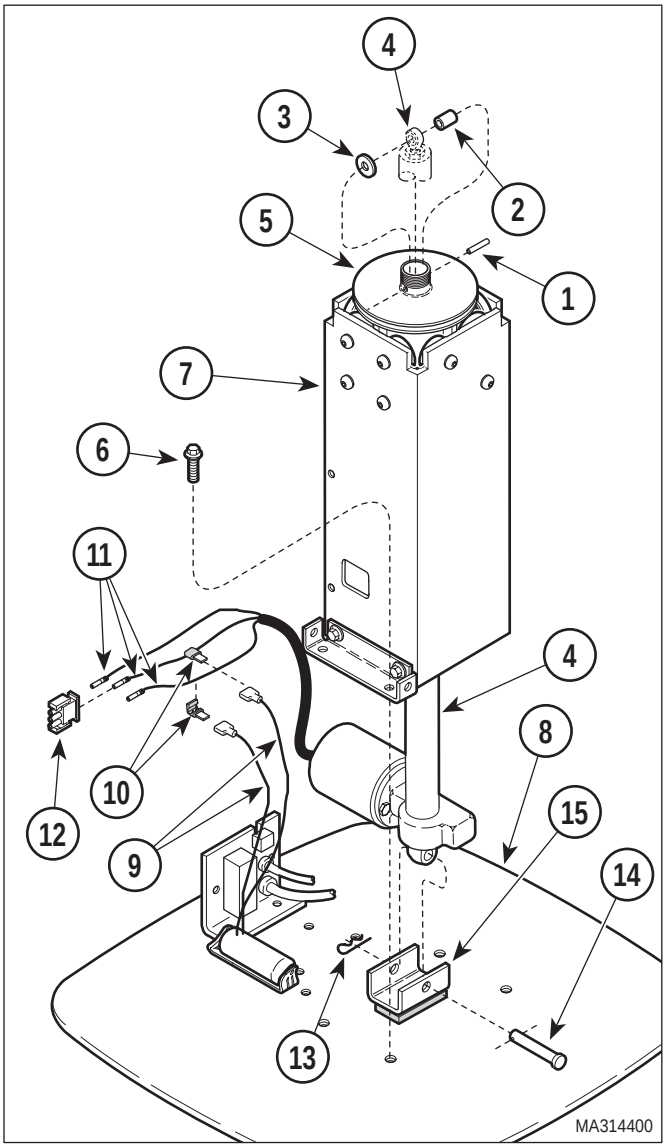

Figure 4-15. Base Actuator Removal / Installation

(20) Remove hitch pin clip (13), clevis pin (14), and base actuator (4) from actuator mount (15).

B. Installation

(1) Install base actuator (4, Figure 4-15) on actuator mount (15) and secure with clevis pin (14) and hitch pin clip (13).

(2) Rotate shaft of new base actuator (4) until it is extended to approximately same length as old base actuator.

(3) Insert three base actuator wires (11) into connector (12).

(4) Install one T-tap (10) on red base actuator wire (11) and one T-tap (10) on black base actuator wire (11).

(5) Connect two capacitor wires (9) to two T-taps (10).

(6) Position elevation column (7) over base actuator (4) and lower onto base casting (8).

(7) Secure elevation column (7) on base casting (8) with four screws (6).

EQUIPMENT ALERT
Facing table from rear, spacer (2) goes on the left and rubber washer (3) goes on the right. Failure to install correctly, could result in premature wear of base actuator and / or excessive noise.

(8) Align shaft of base actuator (4) with slide weldment (5); then secure shaft of base actuator to slide weldment (5) with rubber washer (3), spacer (2), and pin (1).

(9) Secure cable tie (11, Figure 4-14) to base casting (12) and secure with screw (10).

(10) Install starwasher (8) and ground wire (7) on elevation column (9) and secure with screw (6).

(11) Make sure two jumper strips are installed on terminal strip of PC control board (2).

(12) Connect five wires (5) to PC control board (2) and secure by tightening five terminal screws (4).

(13) Connect two modular cords (3) to PC control board (2).

(14) Connect three wire harnesses (1) to PC control board (2).

EQUIPMENT ALERT
On older units, SW1 usually gets pushed in when top wire harness is connected. SW1 must be in pulled out position for table to function properly.

(6) On older units, check position of SW1 (15). If SW1 is not in pulled out position, pull SW1 out. On newer units, check to make sure jumper

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connector (15A) ***is not*** installed. If installed, remove jumper connector from SW1 pins (15B).

(16) Install motor cover (15, Figure 4-13) on elevation column (16) and secure with four screws (14) and two screws (13).

(17) Install R.H. and L.H. shrouds (11) on base mounts (12) and secure with four screws (10) and four screws (9).

(18) Coat top surface of slide weldment (8) with vaseline.

WARNING
Table top is moderately heavy, but is very bulky to lift. Use an assistant and use proper lifting techniques to lift the table top. Failure to do so could result in back injury.

(19) With the help of an assistant, lift table top (7) and position it on slide weldment (8), making sure to route all wires thru center hole of table top.

(20) Install stop (6) in seat casting (5), making sure that bevel of stop is in horizontal position.

NOTE
Do not tighten bolts tightly. The brake assembly will need to be adjusted later.

(21) Install brake assembly (4) on seat casting (5) and secure by tightening two inside bolts (3) and installing two outside lockwashers (2) and bolts (1).

(22) Install thrust bearing (Refer to para 4.7).

(23) Adjust the chair rotational lock (Refer to para 4.17).

(24) Plug chair power cord into wall outlet.

4.9 Column Assembly Removal / Installation

A. Removal

(1) Remove thrust bearing (Refer to para 4.7).

(2) Remove base actuator (Refer to para 4.8).

(3) Remove four nuts (1, Figure 4-16), screws (2), and two base mount angles (3) from elevation column (4).

(4) Remove four screws (5), spacers (6), and PC control board (7) from elevation column (4).

(5) Remove screw (8), ground wire (9), and starwasher (10) from elevation column (4).

NOTE
This step applies only to newer units. Older units do not have a switch cover.

(6) Remove two screws (11) and switch cover (12) from elevation column (4).

(7) Remove two nuts (1, Figure 4-17), lockwashers (2), screws (3), and base down limit switch (4) from elevation column (5).

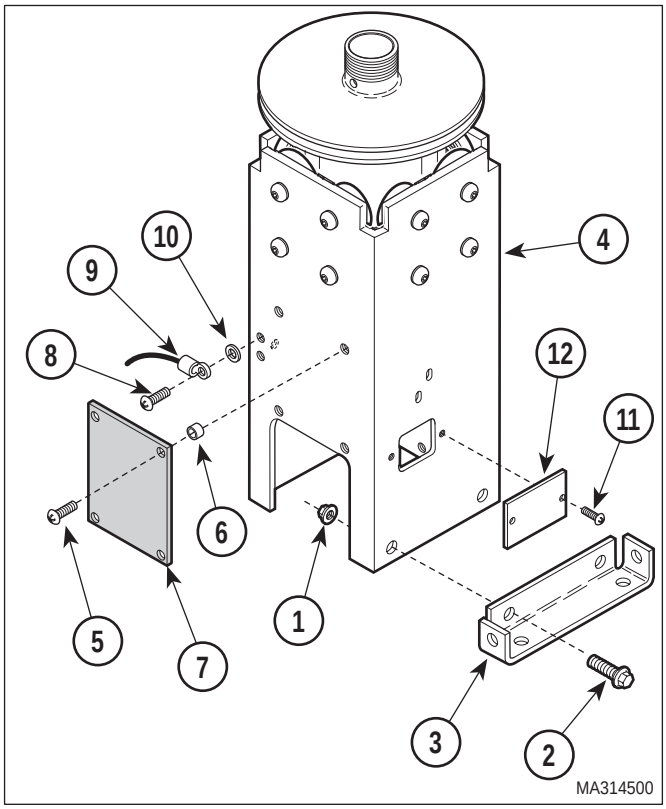

Figure 4-16. Removal / Installation of External Components of Column Assembly

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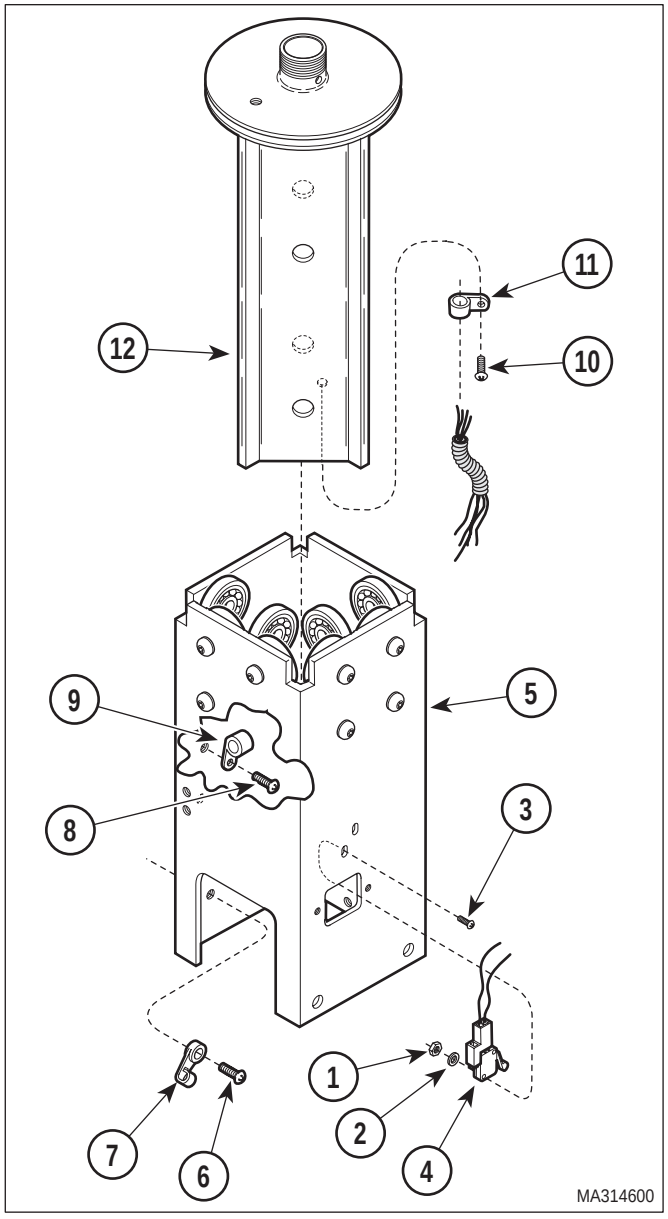

Figure 4-17. Removal / Installation of Internal Components of Column Assembly

(8) Remove screw (6) securing cable tie (7) to elevation column (5).

(9) Remove screw (8) securing cable clamp (9) to elevation column (5).

(10) Remove screw (10) securing cable clamp (11) to slide weldment (12).

B. Installation

(1) Install cable clamp (11, Figure 4-17) on slide weldment (12) and secure with screw (10).

(2) Install cable clamp (9) on elevation column (5) and secure with screw (8).

(3) Secure cable tie (7) on elevation column (5) and secure with screw (6).

(4) Install base down limit switch (4) on elevation column (5) and secure with two screws (3), lockwashers (2), and nuts (1).

NOTE
This step applies only to newer units. Older units do not have a switch cover.

(5) Install switch cover (12, Figure 4-16) on elevation column (4) and secure with two screws (11).

(6) Install starwasher (10) and ground wire (9) on elevation column (4) and secure with screw (8).

(7) Install four spacers (6) and PC control board (7) on elevation column (4) and secure with four screws (5).

(8) Install two base mount angles (3) on elevation column (4) and secure with four screws (2) and nuts (1).

(9) Install base actuator (Refer to para 4.8).

(10) Install thrust bearing (Refer to para 4.7).

(11) Plug chair power cord into wall outlet.

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4.10 Base Capacitor Removal / Installation (Domestic Units Only)

A. Removal

WARNING
Always disconnect the power cord from the wall outlet before removing any of the chair's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) If possible, raise BASE UP function all the way up.

(2) Unplug chair power cord from wall outlet.

(3) Remove four screws (1, Figure 4-18), four screws (2), and R.H. and L.H. shrouds (3) from base mounts (4).

NOTE
Older units have a slightly different motor cover than is shown. Removal is similar.

(4) Remove two screws (5), four screws (6), and motor cover (7) from elevation column (8).

(5) Using a screwdriver, pry tab of mounting bracket (9) outward and separate base capacitor (10) from mounting bracket.

(6) Remove capacitor cap (11) from base capacitor (10).

WARNING
The capacitor contains stored electricity. Never touch terminals of capacitor, even if power has been disconnected. Always discharge capacitor before touching capacitor terminals or wires. Failure to comply with these instructions could result in serious personal injury or death.

(7) Discharge base capacitor (10).

(8) Disconnect two wires (12) from terminals of base capacitor (10) and remove base capacitor.

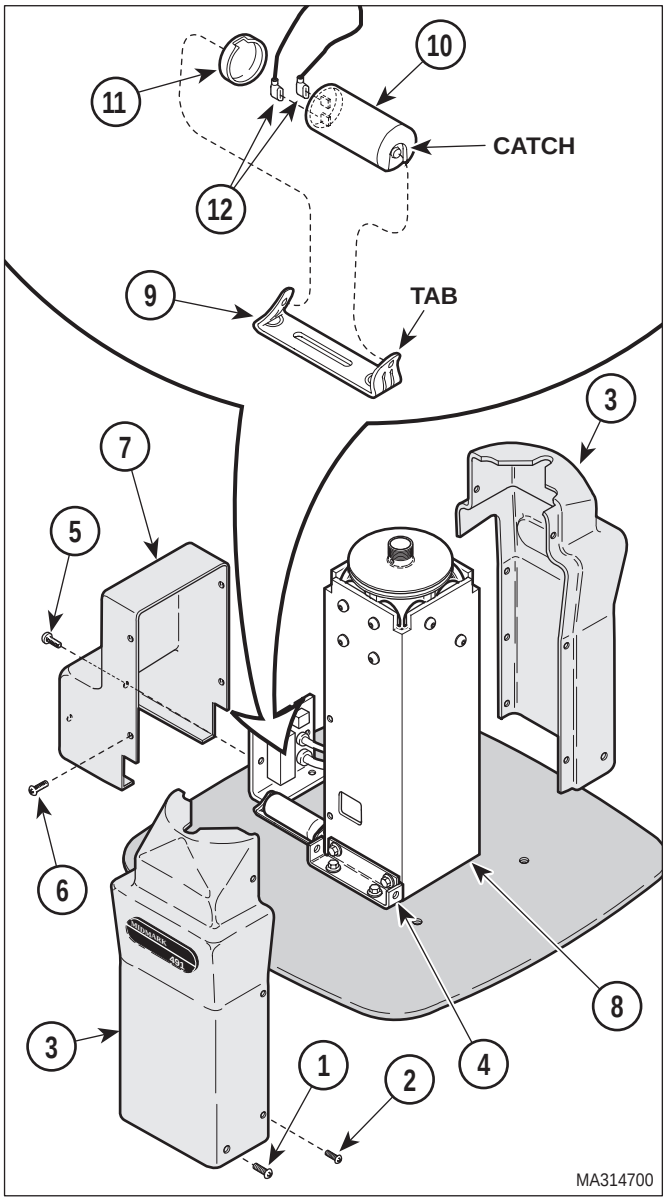

Figure 4-18. Base Capacitor Removal / Installation

B. Installation

(1) Connect one wire (12) to each terminal group of base capacitor (10).

(2) Install capacitor cap (11) on base capacitor (10).

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(3) Position the bottom of base capacitor (10) on mounting bracket (9) and then push the top of the capacitor inward. Using a screwdriver, force the tab of the mounting bracket (9) down over the catch of the capacitor cap (11). Make sure base capacitor (10) is held firmly in place.

(4) Install motor cover (7) on elevation column (8) and secure with four screws (6) and two screws (5).

(5) Install R.H. and L.H. shrouds (3) on base mounts (4) and secure with four screws (2) and four screws (1).

(6) Plug chair power cord into wall outlet.

4.11 Typical Capacitor Removal / Installation (Export Units Only)

A. Removal

WARNING
Always disconnect the power cord from the wall outlet before removing any of the chair's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) If possible, raise BASE UP function all the way up.

(2) Unplug chair power cord from wall outlet.

(3) Remove four screws (1, Figure 4-19), four screws (2), and R.H. and L.H. shrouds (3) from base mounts (4).

NOTE
Older units have a slightly different motor cover than is shown. Removal is similar.

(4) Remove two screws (5), four screws (6), and motor cover (7) from elevation column (8).

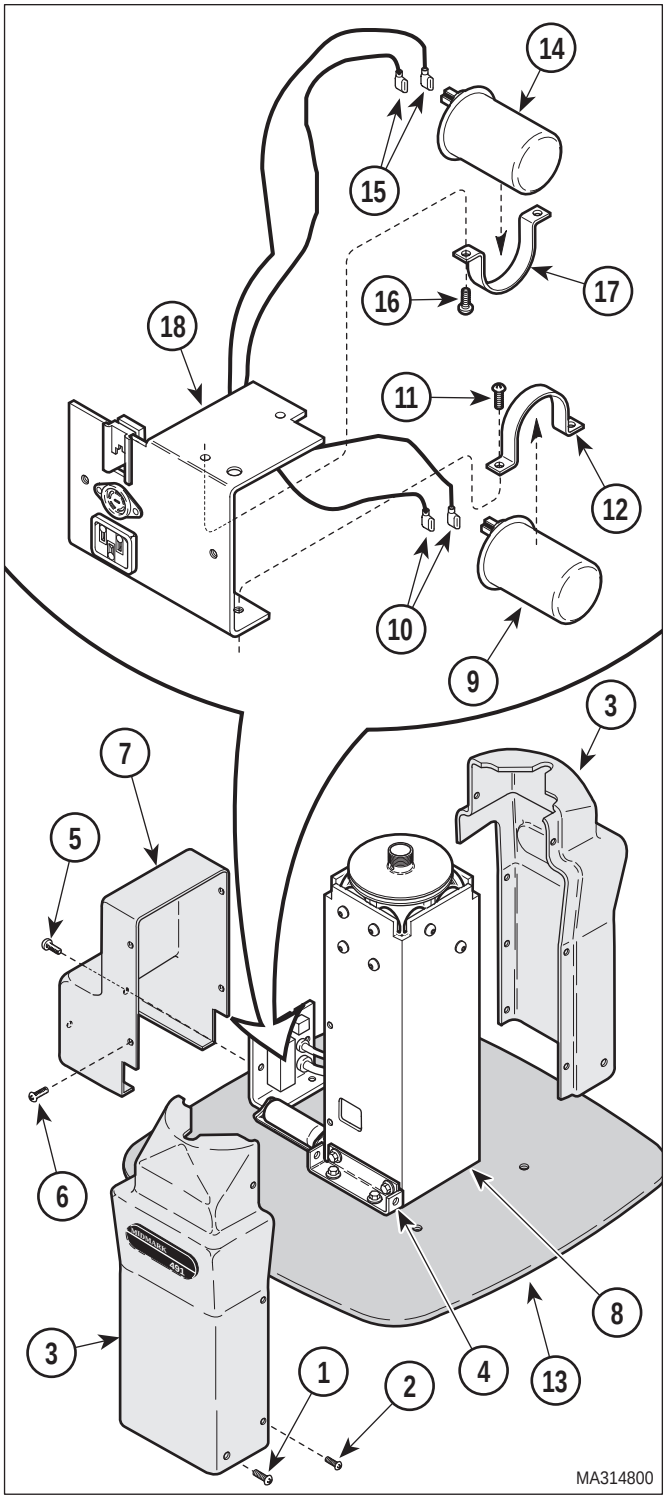

Figure 4-19. Typical Capacitor Removal / Installation (Export Units Only)

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WARNING
The capacitor contains stored electricity. Never touch terminals of capacitor, even if power has been disconnected. Always discharge capacitor before touching capacitor terminals or wires. Failure to comply with these instructions could result in serious personal injury or death.

(5) To remove the base capacitor, perform the following steps:

a. Discharge base capacitor (9).

b. Disconnect two wires (10) from terminals of base capacitor (9).

c. Remove two screws (11), capacitor clamp (12), and base capacitor (9) from base casting (13).

(6) To remove the back capacitor, perform the following steps:

a. Discharge back capacitor (14).

b. Disconnect two wires (15) from terminals of back capacitor (14).

c. Remove two screws (16), capacitor clamp (17), and back capacitor (14) from bracket (18).

B. Installation

(1) To install the back capacitor, perform the following steps; then continue with step 3:

a. Install back capacitor (14) on bracket (18) and secure with capacitor clamp (17) and two screws (16).

b. Connect two wires (15) to terminals of back capacitor (14).

(2) To install the base capacitor, perform the following steps; then continue with step 3:

a. Install base capacitor (9) on base casting (13) and secure with capacitor clamp (12) and two screws (11).

b. Connect two wires (10) to terminals of back capacitor (9).

(3) Connect one wire (10) to each terminal group of capacitor (9).

(4) Install motor cover (7) on elevation column (8) and secure with four screws (6) and two screws (5).

(5) Install R.H. and L.H. shrouds (3) on base mounts (4) and secure with four screws (2) and four screws (1).

(6) Plug chair power cord into wall outlet.

4.12 Actuator Motor / Actuator Brake Removal / Installation

(Applies To Both Actuator Assemblies with Serial Numbers CT1000 thru CT3191 and DG1000 thru DG1432)

A. Removal

(1) Remove malfunctioning actuator assembly: Back actuator assembly (Refer to para 4.5). Base actuator assembly (Refer to para 4.8).

(2) Remove two nuts (1, Figure 4-20) and actuator motor (2) from actuator mechanism (3).

(3) Remove two shoulder washers (4) from actuator mechanism (3).

(4) Remove spacer (5) and motor coupler (6) from shaft of actuator motor (2).

NOTE
A needle nose pliers should be used to extract the actuator brake from the actuator mechanism. Grasp the raised round plate of the actuator brake with the pliers and pull.

(5) Remove actuator brake (7) and rubber damper (8) from shaft of actuator mechanism (3).

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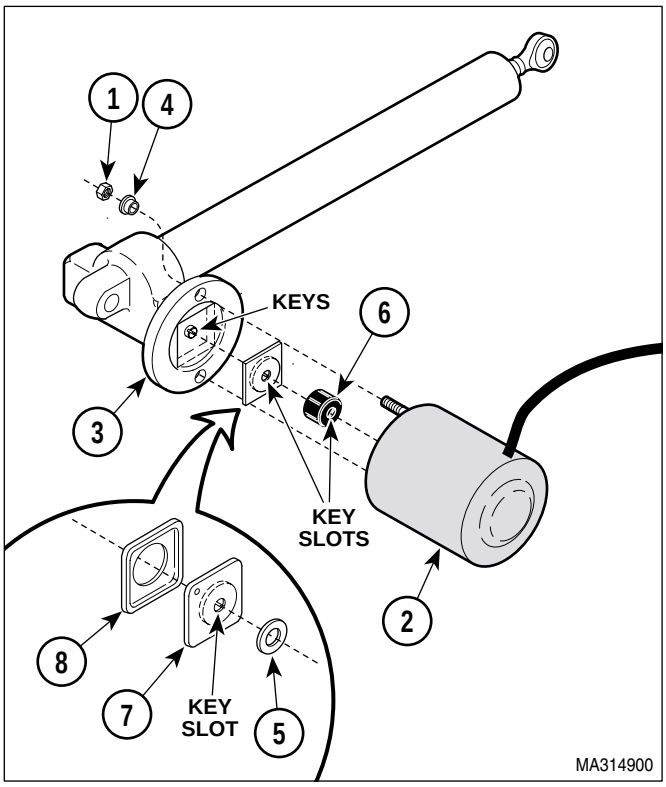

Figure 4-20. Actuator Motor / Actuator Brake Removal / Installation

B. Installation

NOTE
The rubber damper must be installed so its flat side faces the inside of the actuator mechanism. The actuator brake must be installed so its flattest side faces outward. The shaft of the actuator mechanism may be turned with a screwdriver to help align the keys of the actuator mechanism shaft with the key slots in actuator brake.

(1) Install rubber damper (8), actuator brake (7), and spacer (5) in actuator mechanism (3).

(2) Install motor coupler (6) on shaft of actuator motor (2).

(3) Install two shoulder washers (4) in actuator mechanism (3).

(4) Align keys of actuator mechanism (3) shaft with key slots of motor coupler (6) and then install actuator motor (2) on actuator mechanism (3) and secure with two nuts (1).

(5) Install actuator assembly:
Back actuator assembly (Refer to para 4.5).
Base actuator assembly (Refer to para 4.8).

(6) Check actuator assembly for proper operation. The actuator assembly should run normally and should not make a grinding noise; this indicates that key slots of motor coupler were not aligned properly with keys of actuator mechanism (the grinding noise also indicates that the motor coupler is being damaged). The actuator assembly should brake properly.

4.13 Base Down Limit Switch Removal / Installation / Adjustment

A. Removal

(1) If possible, raise BASE UP function all the way up.

WARNING
Always disconnect the power cord from the wall outlet before removing any of the chair's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(2) Unplug chair power cord from wall outlet.

(3) Remove four screws (1, Figure 4-21), four screws (2), and R.H. and L.H. shrouds (3) from base mounts (4).

NOTE
Older units have a slightly different motor cover than is shown. Removal is similar.

(4) Remove two screws (5), four screws (6), and motor cover (7) from elevation column (8).

NOTE
This step applies only to newer units. Older units do not have a switch cover.

(5) Remove two screws (1, Figure 4-22) and switch cover (2) from elevation column (3).

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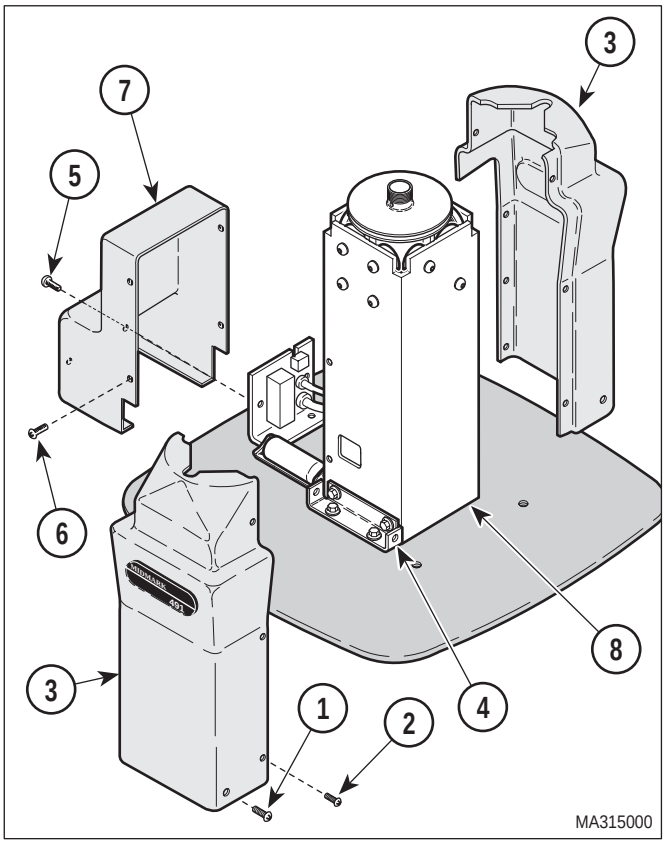

Figure 4-21. Shrouds and Cover Removal / Installation

(6) Insert index finger thru access hole to hold nuts (4); then remove two nuts (4). lockwashers (5), screws (6), and base down limit switch (7) from elevation column (3).

(7) Pull base down limit switch (7) thru access hole.

(8) Disconnect wire harness (8) from base down limit switch (7).

B. Installation

(1) Connect wire harness (8) to base down limit switch (7).

(2) Push base down limit switch (7) thru access hole.

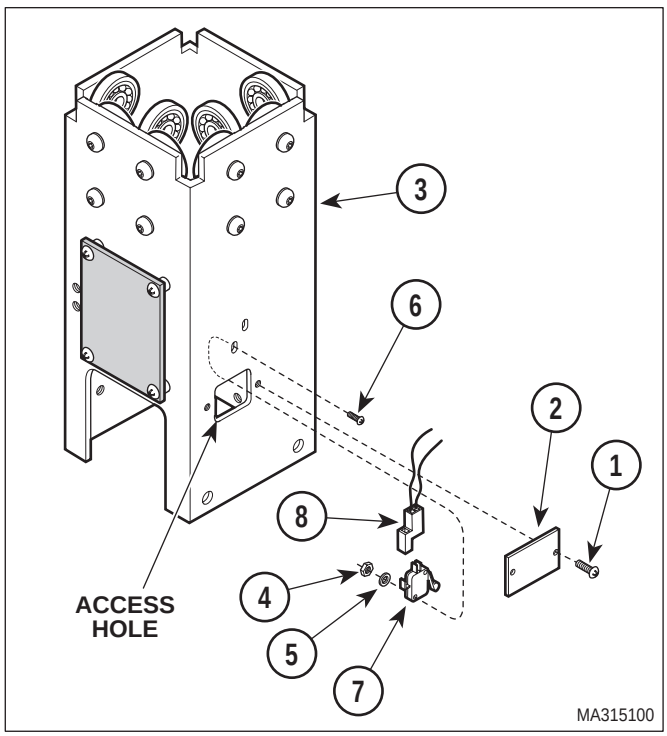

Figure 4-22. Base Down Limit Switch Removal / Installation / Adjustment

(3) Using index finger, position base down limit switch (7) on elevation column (3) and secure with two screws (6), lockwashers (5), and nuts (4).

C. Adjustment

NOTE
If performing adjustment procedure only, perform steps 1 thru 5 of removal to gain access to base down limit switch.

(1) Raise BASE UP function approximately 6 in. (15.2 cm).

(2) Press the AUTO RETURN button and observe.

(3) If base actuator continues to run after table top is completely lowered, loosen two nuts (4) and raise base down limit switch (7) slightly. Tighten two nuts (4).

(4) Repeat steps 1 thru 3 until base actuator automatically stops running after table top is completely lowered.

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NOTE
This step applies only to newer units. Older units do not have a switch cover.

(5) Install switch cover (2) on elevation column (3) and secure with two screws (1).

(6) Install motor cover (7, Figure 4-21) on elevation column (8) and secure with four screws (6) and two screws (5).

(7) Install R.H. and L.H. shrouds (3) on base mounts (4) and secure with four screws (2) and four screws (1).

(8) Plug chair power cord into wall outlet.

4.14 Back Up Limit Switch Removal / Installation / Adjustment

A. Removal

WARNING
Always disconnect the power cord from the wall outlet before removing any of the chair's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Unplug chair power cord from wall outlet.

(2) Remove upholstered seat section (1, Figure 4-23) from seat casting (2).

(3) Remove three screws (3) and seat cover (4) from seat casting (2).

(4) Cut cable tie (5) securing two wires (6) from shaft of back actuator (7).

(5) Remove two nuts (8), lockwashers (9), screws (10), and back up limit switch (11) from switch bracket (12).

(6) Tag and disconnect two wires (6) from back up limit switch (11).

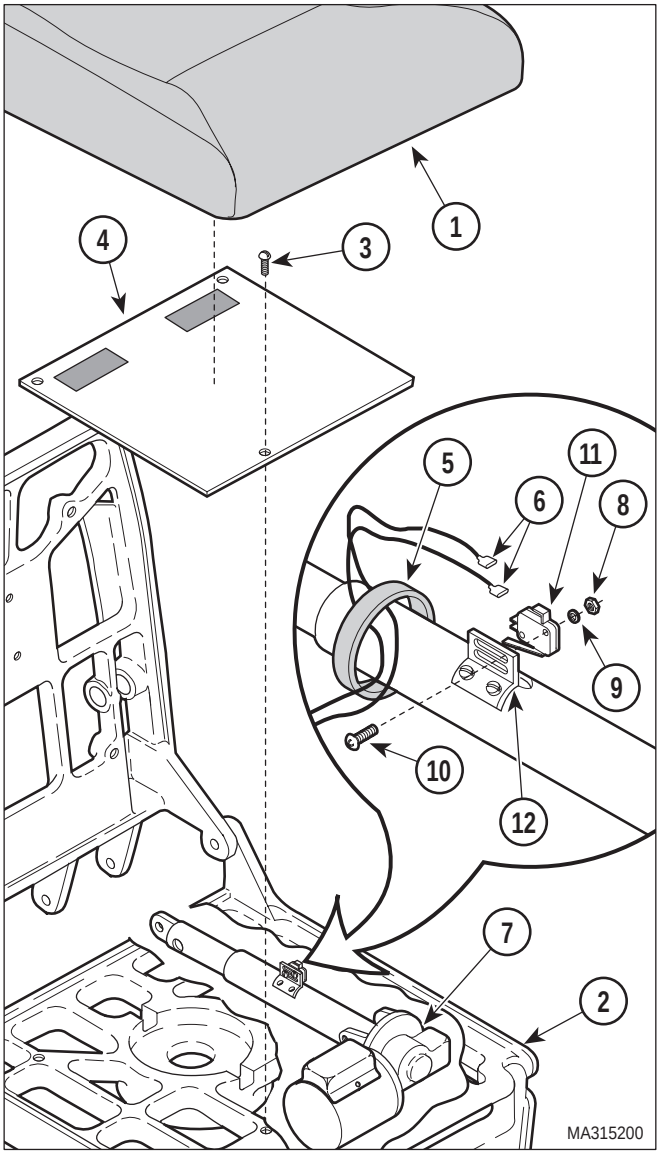

Figure 4-23. Back Up Limit Switch Removal / Installation / Adjustment

B. Installation

(1) Connect one wire (6) to COM. terminal and other wire (6) to N.C. terminal of back up limit switch (11).

(2) Install back up limit switch (11) on switch bracket (12) and secure with two screws (10), lockwashers (9), and nuts (8).

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C. Adjustment

NOTE
If performing adjustment procedure only, perform steps 1 thru 3 of removal to gain access to back up limit switch.

(1) Lower BACK DOWN function approximately 6 in. (15.2 cm).

(2) Press the AUTO RETURN button and observe.

NOTE
Determining a comfortable "chair" position is based upon opinion. If necessary, find out from the person using the table what "chair" position is best for his / her needs.

(3) If back section stops in a comfortable "chair" position, adjustment is not necessary.
If back section stops in too low a position, loosen two nuts (8), slide back up limit switch (11) away from actuator motor and then retighten nuts.
If back section stops in too high a position, loosen two nuts (8), slide back up limit switch (11) toward actuator motor and then retighten nuts.

(4) Repeat steps 1 thru 3 until back section stops in a comfortable "chair" position.

(5) Secure two wires (6) to shaft of back actuator (7) with cable tie (5).

(6) Install seat cover (4) on seat casting (2) and secure with three screws (3).

(7) Install upholstered seat section (1) on seat casting (2).

(8) Plug chair power cord into wall outlet.

4.15 Typical Foot Pedal Footswitch Removal / Installation

A. Removal

(1) Remove screw (1, Figure 4-24), lockwasher (2), and footswitch pedal (3) from switch mount (4).

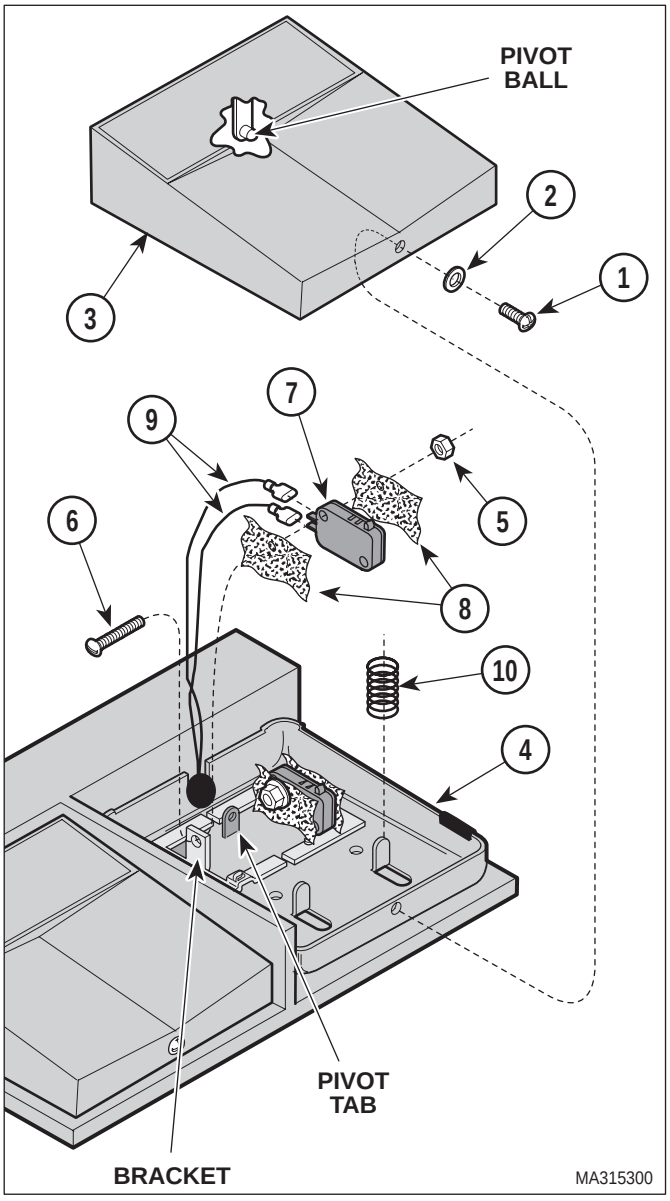

Figure 4-24. Typical Foot Pedal Footswitch Removal / Installation

(2) Remove nut (5), screw (6), footswitch (7), and two insulators (8) from bracket of switch mount (4).

(3) Tag and disconnect two wires (9) from terminals of footswitch (7).

B. Installation

(1) Connect one wire (9) to COM. terminal and other wire (9) to N.O. terminal of footswitch (7).

(2) Install two insulators (8) and footswitch (7) on bracket of switch mount (4) and secure with screw (6) and nut (5).

(3) Ensure springs (10) are in position on posts and have not fallen off.

(4) Install footswitch pedal (3) on switch mount (4) and secure with lockwasher (2) and screw (1), making sure pivot ball of footswitch pedal is mounted in pivot tab of switch mount.

4.16 Arm Rest Linkage Adjustment

A. Adjustment

(1) Remove four screws (1, Figure 4-25) and headrest assembly or headrest block (2) from back casting (3).

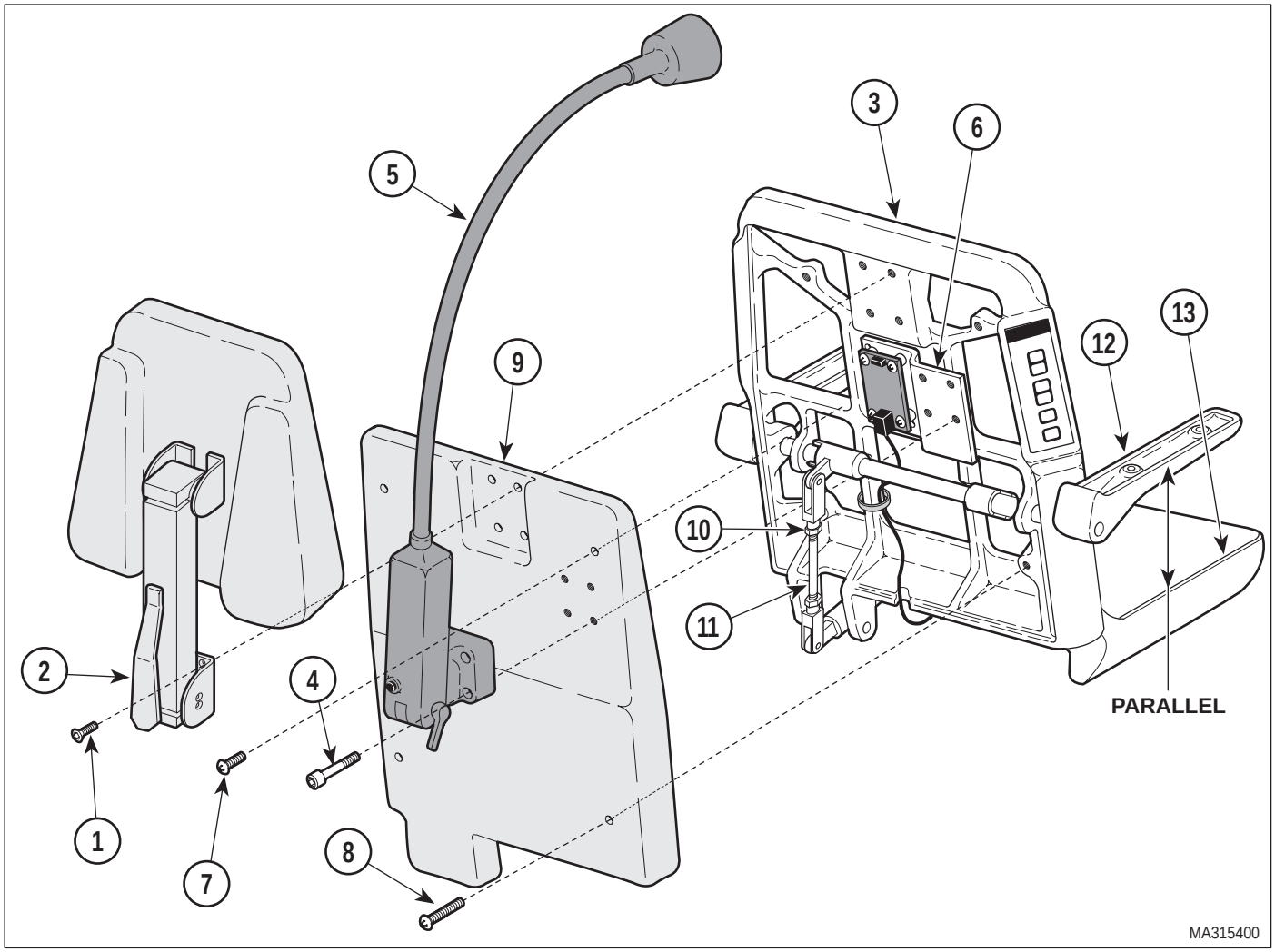

Figure 4-25. Arm Rest Linkage Adjustment

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(2) If chair has an optional exam light assembly, remove four screws (4) and exam light assembly (5) from light bracket (6).

(3) Remove two short screws (7), two long screws (8), and back cover (9) from back casting (3).

(4) Lower BACK DOWN function all the way down.

(5) Press AUTO RETURN button.

(6) Loosen jam nut (10).

(7) Adjust linkage rod (11) until arm castings (12) are parallel with seat casting (13).

(8) While holding linkage rod stationary, tighten jam nut (10).

(9) Install back cover (9) on back casting (3) and secure with two long screws (8) and two short screws (7). Tighten screws until back cover starts to deform.

(10) If removed, install exam light assembly (5) on light bracket (6) and secure with four screws (4).

(11) If removed, install headrest assembly or headrest block (2) on back casting (3) and secure with four screws (1).

4.17 Chair Rotational Lock Adjustment

A. Brake Adjustment

(1) Rotate brake lever (1, Figure 4-26) to the "unlocked" position.

(2) Loosen four bolts (2).

(3) Push stop weldment (3) in toward column and then tighten four bolts (2).

(4) Rotate brake lever (1) to the locked position and attempt to rotate the table top.

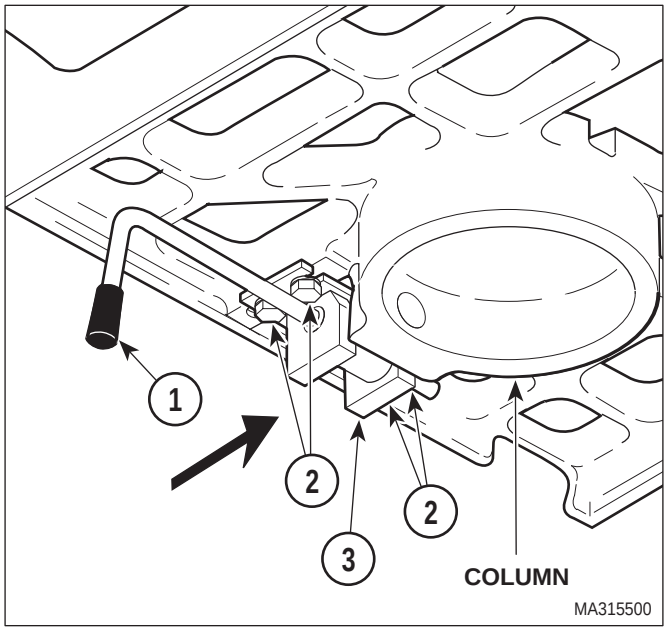

Figure 4-26. Chair Rotational Lock Adjustment

(5) If the braking action is too light, repeat steps 1 thru 4 again, pushing stop weldment (3) in even further toward column.
If the braking action is too hard, repeat steps 1 thru 4 again, but move stop weldment (3) away from column slightly.

(6) Repeat steps 1 thru 5 until braking action of chair rotational lock is satisfactory.

B. Brake Lever Adjustment

(1) Loosen two setscrews (1, Figure 4-27).

(2) Rotate brake lever (2) until it is in vertical position.

(3) Rotate cam stop (3) until raised portion of cam is pointing toward floor.

(4) Retighten two setscrews (1).

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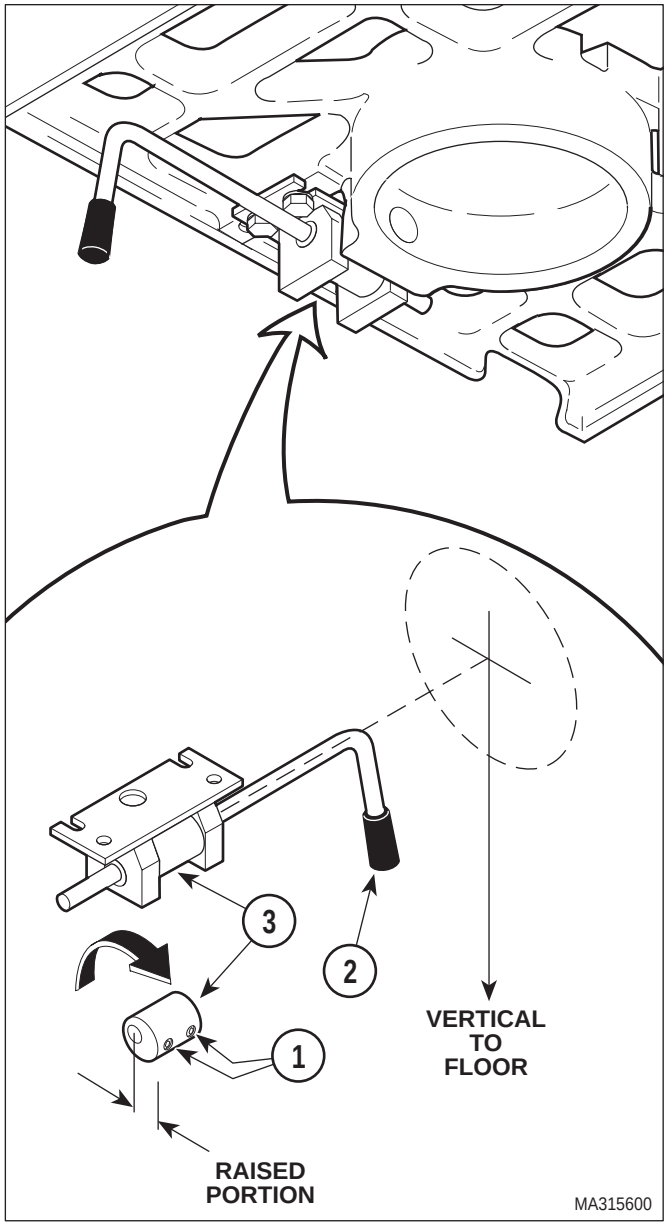

Figure 4-27. Brake Lever Adjustment

4.18 Headrest Assembly Adjustment

A. Adjustment

NOTE
The standard headrest assembly is shown in this illustration. The procedure for adjusting all headrests which can be used on this chair is the same.

(1) Unlock locking handle (See Figure 4-28).

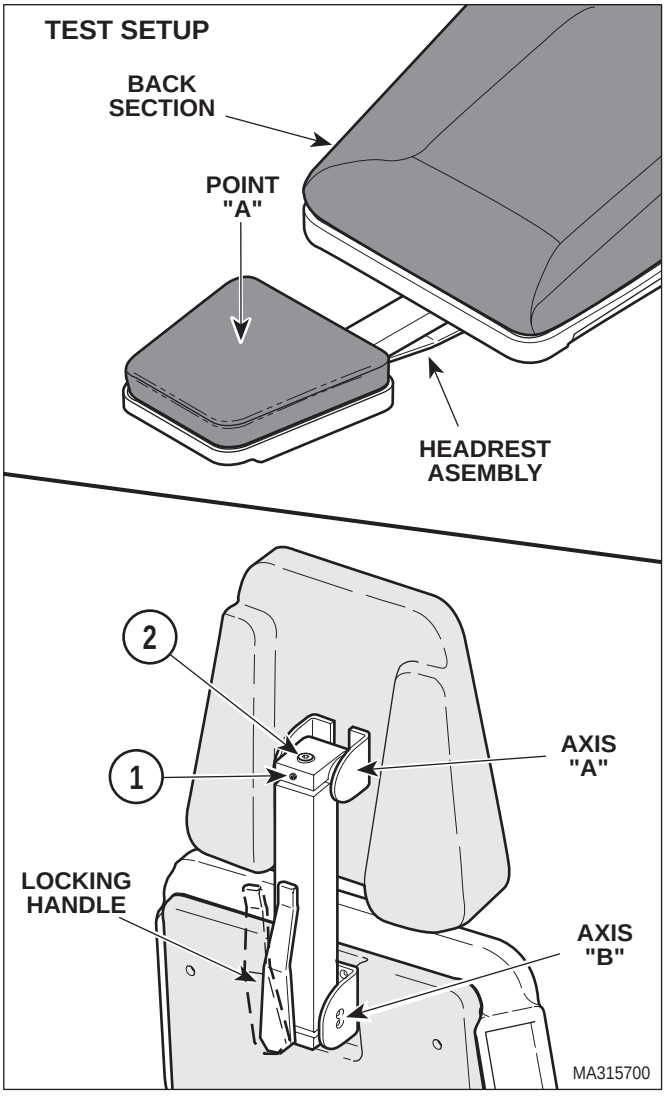

Figure 4-28. Headrest Assembly Adjustment

(2) Loosen setscrew (1, Figure 4-28).

(3) Tighten adjusting screw (2) slightly; then lock locking handle. Repeat this step until Axis A and B have the strongest possible holding power, but operation of locking handle is not too difficult.

(4) Tighten setscrew (1).

(5) Lower BACK DOWN function all the way down.

(6) Position headrest assembly as shown in TEST SETUP.

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NOTE
The maximum force required to unclamp a locking handle should be 17 lbs (7.7 kg) and the maximum force required to clamp a locking handle should be 35 lbs (15.8 kg).

(7) Place a 45 lb (20.4 kg) weight on headrest assembly at Point A.

DANGER
Failure to adjust headrest assembly to specifications could result in a failure during a procedure. This could cause severe personal injury to a patient or the need to terminate the procedure.

(8) Observe. The headrest assembly should support the test weight without drifting downward. If not, repeat entire adjustment procedure. If headrest assembly does not meet test standards, do not use headrest assembly.

4.19 Headrest Handles Handle Stops Adjustment

A. Adjustment

NOTE
The standard headrest assembly is shown in this illustration. The procedure for adjusting all headrests which can be used on this chair is the same.

(1) Loosen nut (1, Figure 4-29).

(2) Push on locking handle until it reaches a point where the locking handle wants to lock itself by going over center; then allow locking handle to go over center a few degrees. Hold the locking handle in this position and adjust stop screw (2) so the locking handle will be forced to stop in this position each time it is locked.

(3) Tighten nut (1).

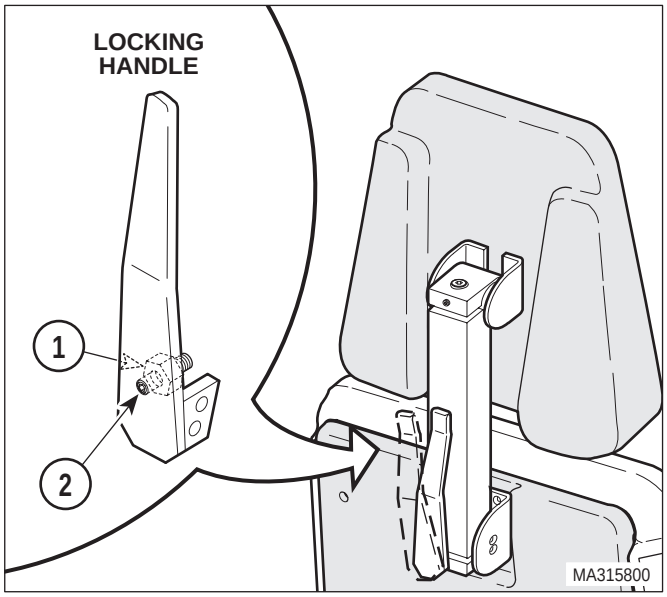

Figure 4-29. Headrest Locking Handle Stop Adjustment

4.20 Column Eccentric Tires Adjustment

A. Removal

WARNING
Always disconnect the power cord from the wall outlet before removing any of the chair's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) If possible, raise BASE UP function all the way up.

(2) Unplug chair power cord from wall outlet.

(3) Remove four screws (1, Figure 4-30), four screws (2), and R.H. and L.H. shrouds (3) from base mounts (4).

NOTE
Older units have a slightly different motor cover than is shown. Removal is similar.

(4) Remove two screws (5), four screws (6), and motor cover (7) from elevation column (8).

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NOTE
All concentric tire bearings are designated with the letter A. All eccentric tire bearings are designated with the letter B.

(5) Check tightness of concentric bolts (1, Figure 4-31). Tighten all concentric bolts (1) to 15 ft-lbs (20.3 N•m).

(6) Lower BASE DOWN function all the way down; then raise BASE UP function all the way up while observing one of the eccentric bearings (B).

(7) Observe. Any eccentric bearing, which does not make contact and rotate at at least one point during the raising of the column, needs to be adjusted.

(8) Loosen bolt (2) for eccentric bearing (B) needing adjusted.

NOTE
Rotate thick portion of center post as close to the fin of the inner slide weldment (3) as possible, so tire bearing will place the maximum pressure on the fin of the inner slide weldment, resulting in a stable column. The reason for turning the center post in a clockwise direction is because there is a tendency for the thick portion of center post to rotate even further toward the fin of the inner slide weldment when its bolt is tightened. If the center post was rotated in the other direction, tightening the bolt would have the tendency to rotate the thick portion of center post away from the fin of inner slide weldment.

(9) Rotate center post of tire, as far as possible in clockwise direction, until thick portion of center post is facing toward fin of inner slide weldment (3).

(10) Tighten bolt (2) to 15 ft-lbs (20.3 N•m).

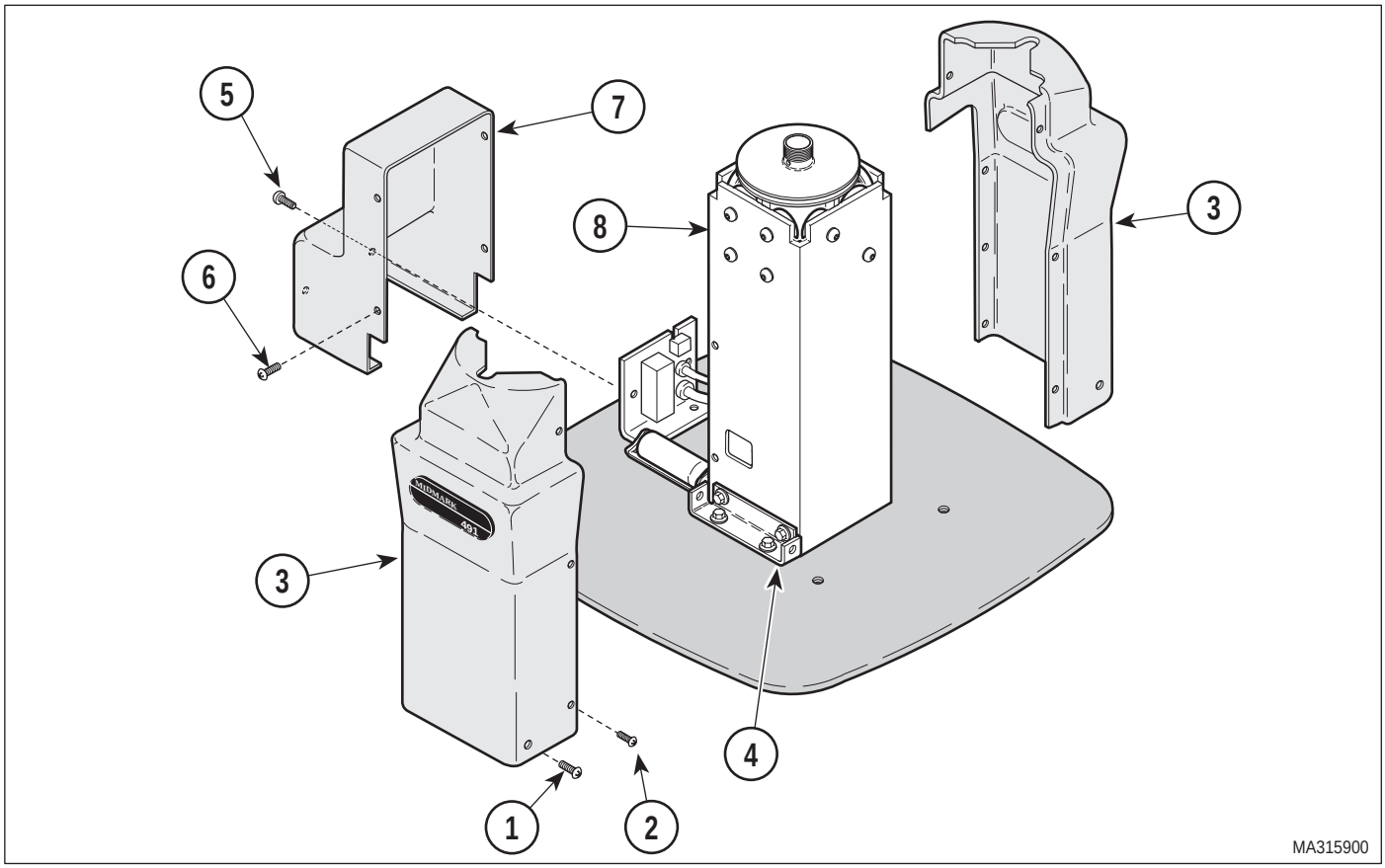

Figure 4-30. Shrouds and Motor Cover Removal / Installation

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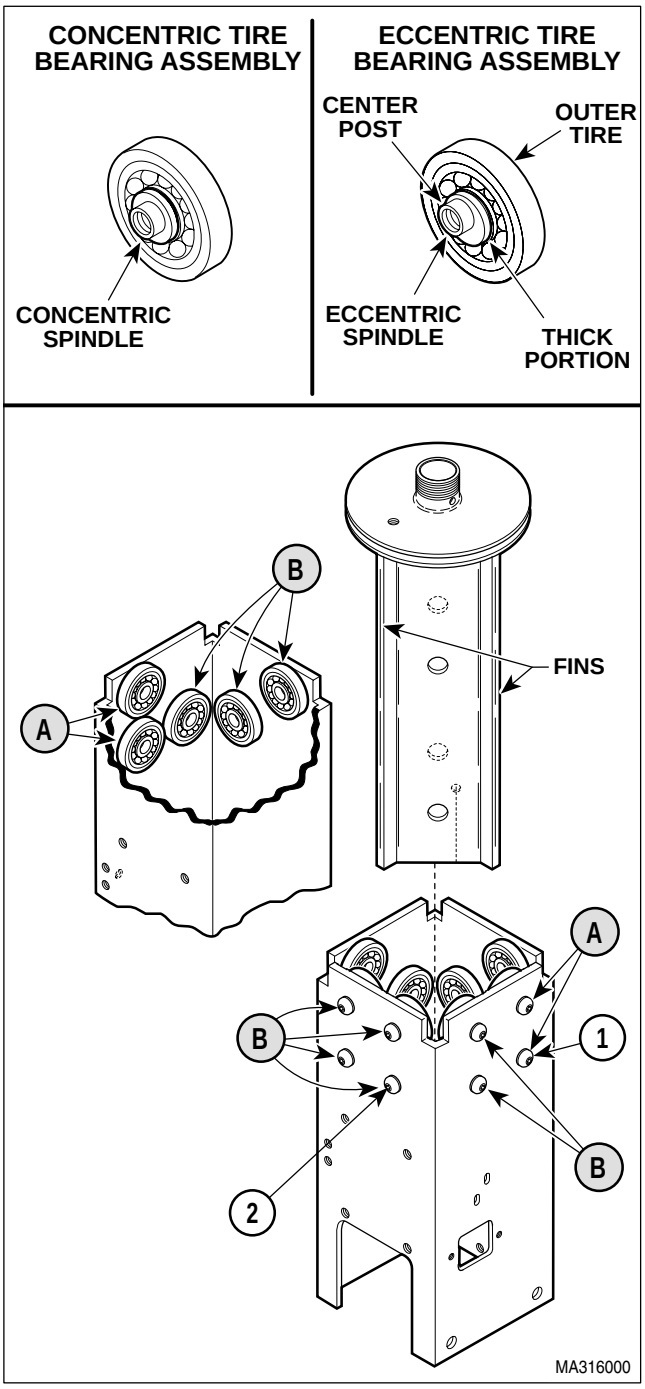

Figure 4-31. Column Eccentric Tires Adjustment

(11) Repeat steps 6 thru 10 until all eccentric bearings (B) have been observed and adjusted as necessary.

(12) Install motor cover (7, figure 4-30) on elevation column (8) and secure with four screws (6) and two screws (5).

(13) Install R.H. and L.H. shrouds (3) on base mounts (4) and secure with four screws (2) and four screws (1).

(14) Plug chair power cord into wall outlet.

4.21 Foot Rest Stop Adjustment

A. Adjustment

NOTE
Perform this adjustment if foot rest will not stay in the stowed position by itself.

(1) Raise foot rest (1, Figure 4-32) up to the stowed position.

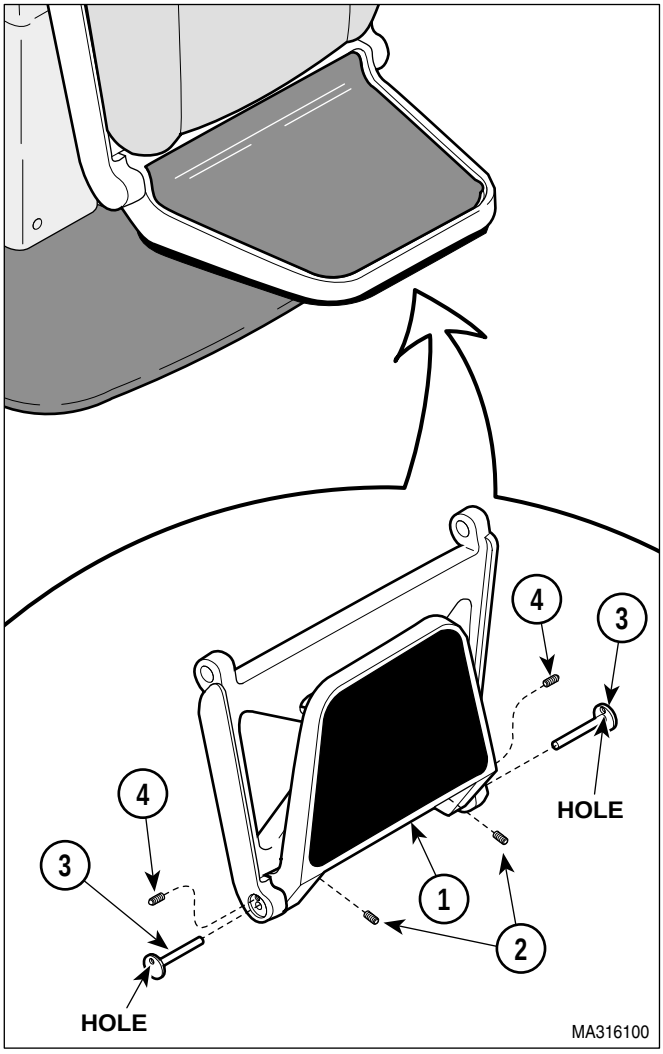

Figure 4-32. Footrest Stop Adjustment

(2) Loosen two setscrews (2).

(3) While holding foot rest (1) in stowed position, align hole in pin weldment (3) with ball plunger (4).

(4) Push in on pin weldment (3) while tightening setscrew (2). Repeat for other setscrew.

4.22 Main Harness Replacement

A. Removal

WARNING
Always disconnect the power cord from the wall outlet before working on chair. Failure to comply with these instructions could result in personal injury.

(1) Remove thrust bearing (Refer to para 4.7).

(2) Remove brake assembly (1, Fig. 4-33) (four bolts) and the stop (2).

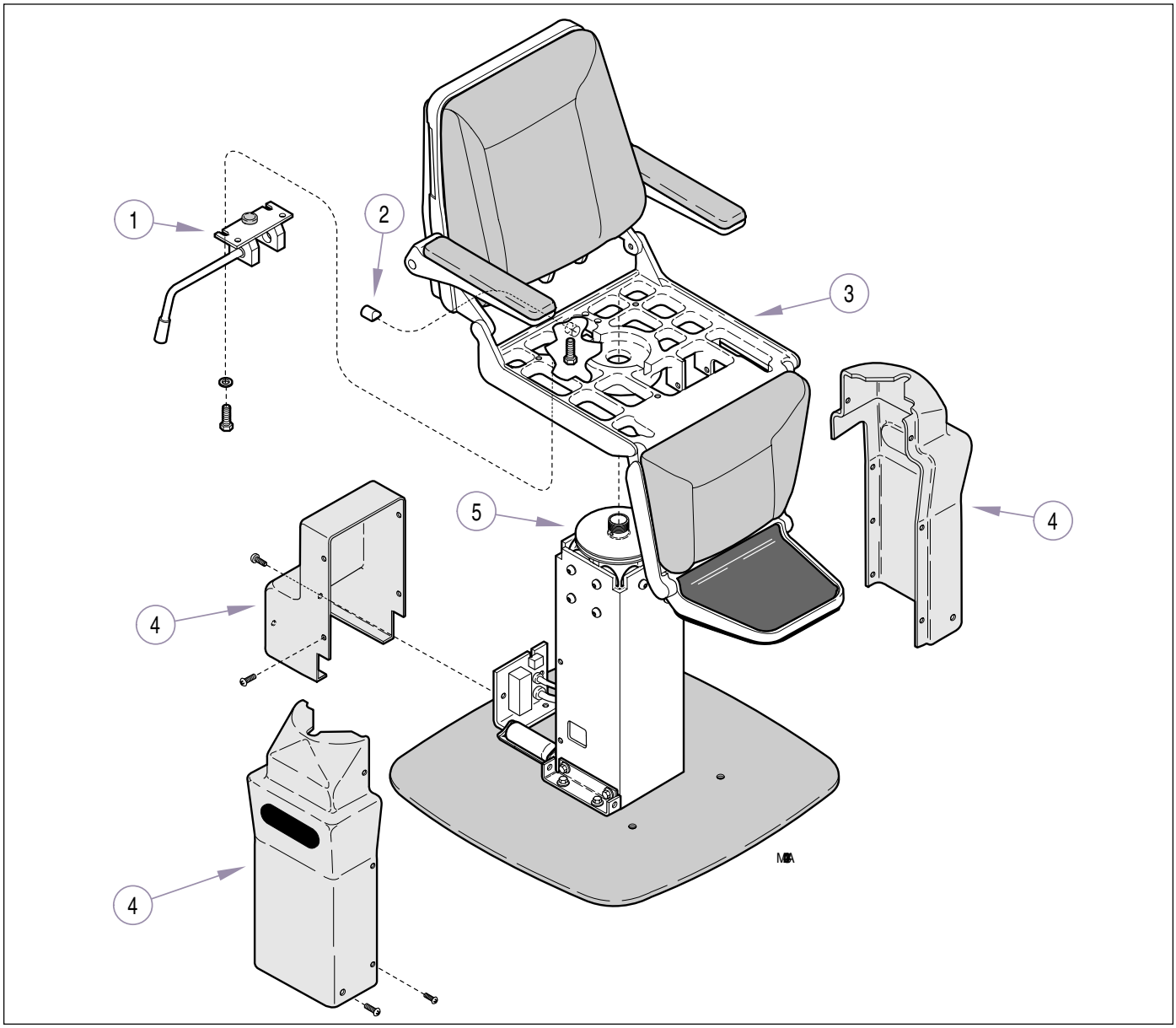

Figure 4-33. Main Harness

WARNING

Use two people to lift table from col umn. Failure to do so could result in personal injury.

(3) Using an assistance, lift table top (3) off column.

(4) Remove shrouds (4).

(5) Disconnect wire harness (1, Fig. 4-34) from PC board (2).

(6) Remove ground wire (3).

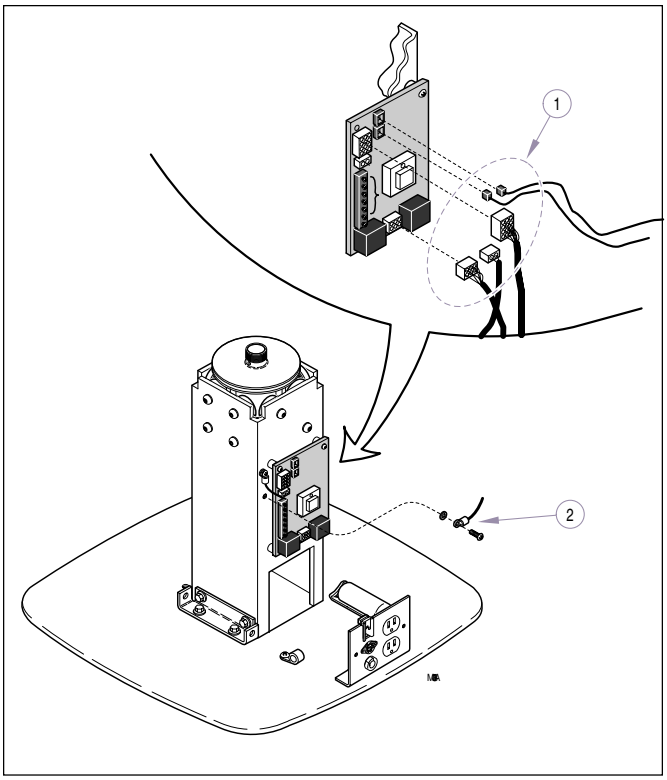

Figure 4-34. Main Harness

(7) Remove pin (1, Fig.4-35), spacer (2), and rubber washer (3).

(8) Remove mounting bolts (4) and lift column assembly (5) from actuator shaft.

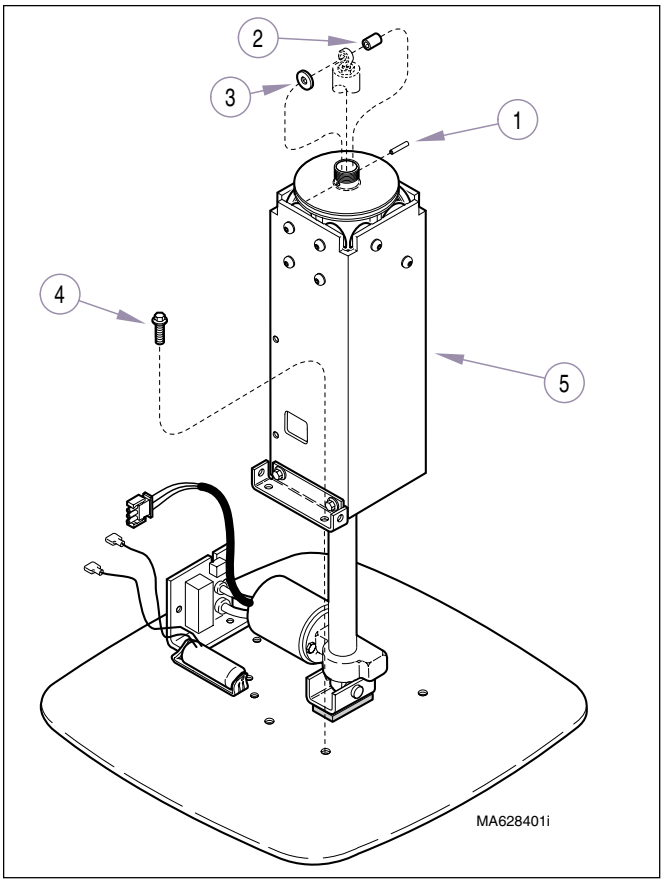

Figure 4-35. Main Harness

NOTE
Lay column on its side, as shown in Figure 36, and remove existing wiring harness.

B. Installation

NOTE
Wire harness must be routed as shown (Figure 36). Loose wire leads at bottom of column must be twisted and secured to prevent damage during movement of slide.

(1) Route wire harness thru column. End (1, Fig. 4-36) of harness with longest protruding cordset (phone connector) goes thru top of column.

(2) Secure harness to slide weldment (2) with cable clamp (3). Locate clamp 1/4" from end of flex guard.

(3) Carefully twist loose leads together (4) and secure to column with cable tie (5).

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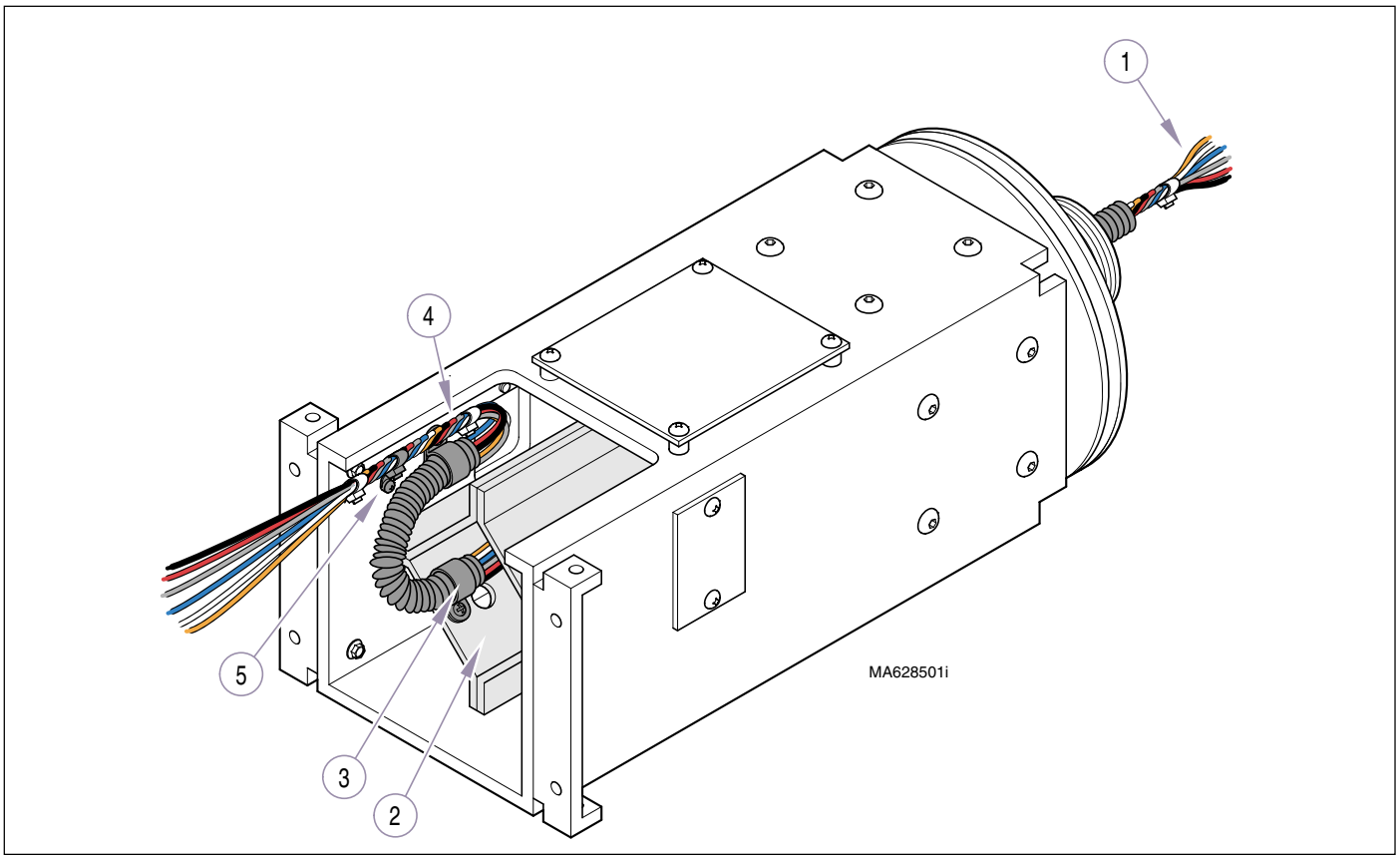

Figure 4-36. Main Harness

(4) Install column assembly (5, Fig. 4-35) and secure with mounting bolts (4).

(5) Install pin (1), spacer (2), and rubber washer (3).

(6) Install ground wire (2, Fig. 4-34) and connect wire harnesses (1) to PC board.

(7) Coat top surface of slide weldment (5, Fig. 4-33) with vaseline.

(8) While feeding wire harness thru center hole of table top (3), position top on slide weldment (5).

(9) Install brake assembly (1) but do not tighten mounting bolts or adjust brake until after the thrust bearing has been installed.

(10) Install thrust bearing (Refer to para 4.7).

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SECTION V
SCHEMATICS AND DIAGRAMS

5.1 Electrical Schematics / Wiring Diagrams

Figures 5-1 and 5-2 illustrate the logic/current flow and wiring connections between the electrical components in the chair.

See next page for Figure 5-1

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SECTION V
SCHEMATICS AND DIAGRAMS

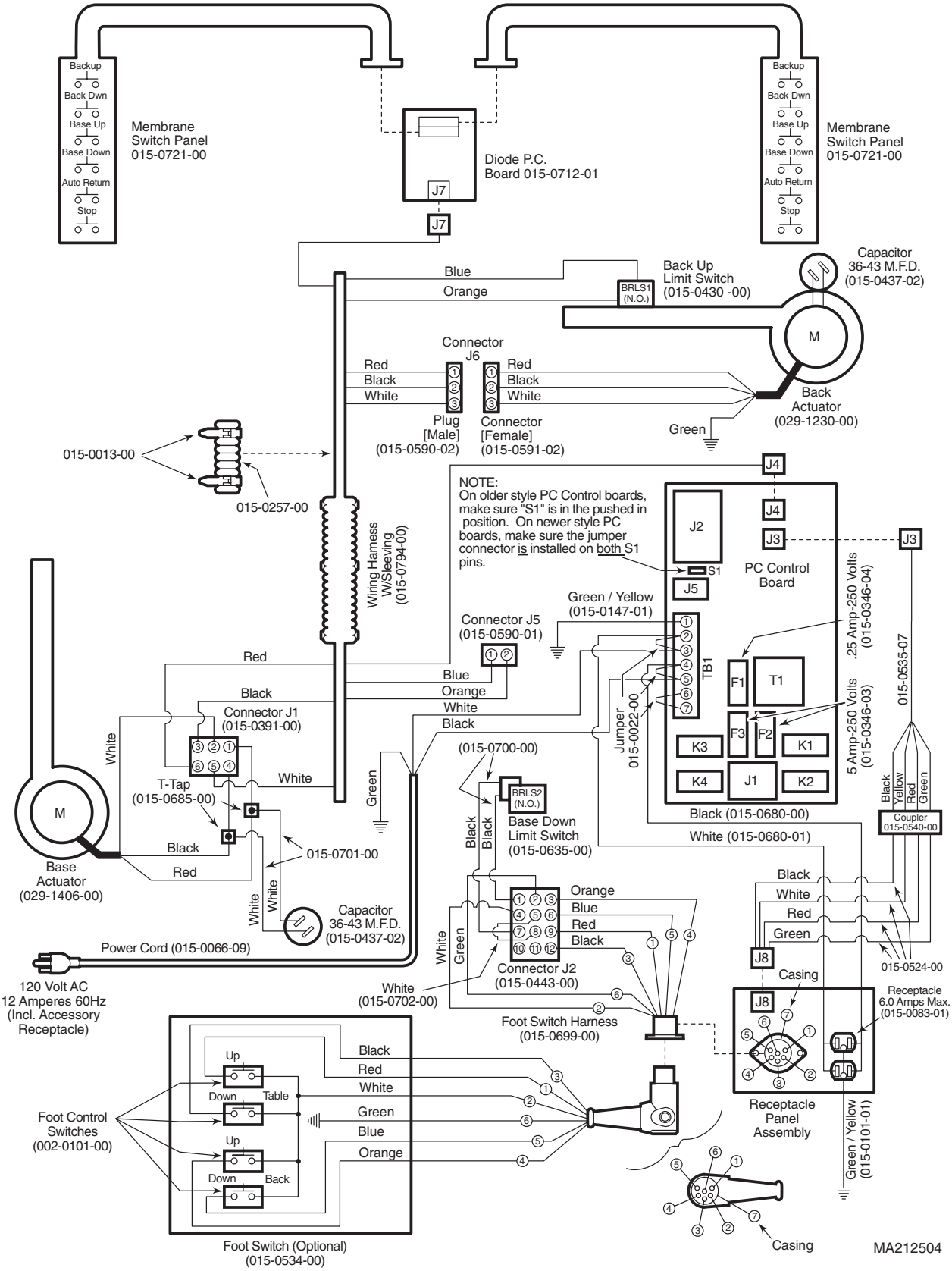

Figure 5-1. Domestic Electrical Schematic / Wiring Diagram

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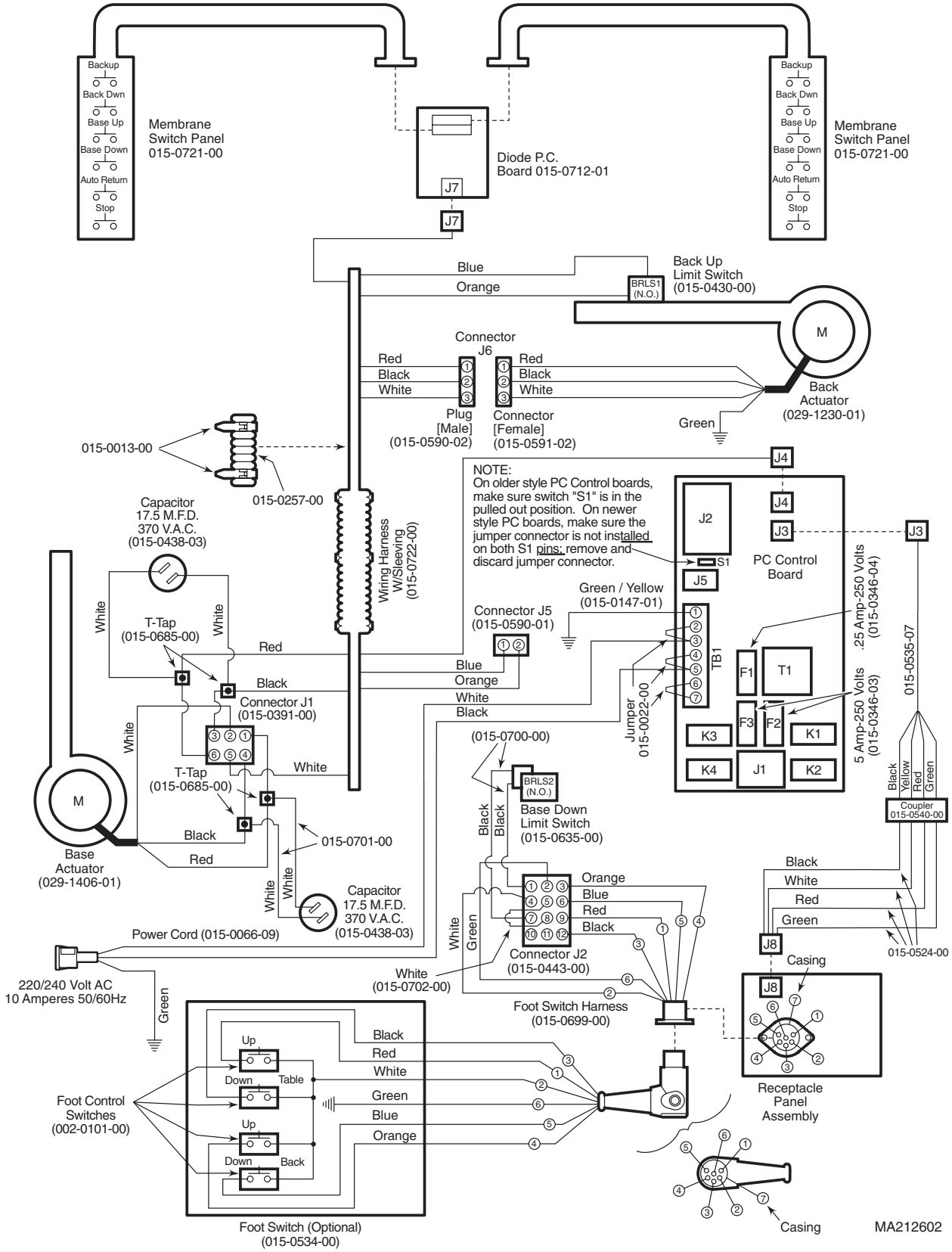

Figure 5-2. Export Electrical Schematic / Wiring Diagram

SECTION V
SCHEMATICS AND DIAGRAMS

5.2 Diagnostic L.E.D. Charts

Table 5-1 can be used to troubleshoot the chair thru diagnosis of a function's L.E.D. status. The first column lists each function that may be selected by an operator. The second column lists which L.E.D's will illuminate, when a particular function is selected when the unit is functioning properly. See Figure 5-3 for L.E.D. locations.

Table 5-1. Diagnostic L.E.D. Chart

Selected Function Button	L.E.D's Which Should Be Illuminated When Function Is Selected
Hand Control	
BASE UP button	data line #1 L.E.D. / data line #3 L.E.D. / base up relay L.E.D.
BASE DOWN button	data line #2 L.E.D. / data line #3 L.E.D. / base down relay L.E.D.
BACK UP button	data line #1 L.E.D. / back up relay L.E.D.
BACK DOWN button	data line #2 L.E.D. / back down relay L.E.D.
AUTO RETURN button	data line #3 L.E.D. / auto return back function L.E.D. / auto return base function L.E.D. / base down relay L.E.D. / back up relay L.E.D.
STOP button	data line #1 L.E.D. / data line #2 L.E.D. / data line #3 L.E.D.
Foot Control	
BASE UP foot pedal	foot control base up L.E.D. / base up relay L.E.D.
BASE DOWN foot pedal	foot control base down L.E.D. / base down relay L.E.D.
BACK UP foot pedal	foot control back up L.E.D. / back up relay L.E.D.
BACK DOWN foot pedal	foot control back down L.E.D. / back down relay L.E.D.

NOTE: All amber L.E.D's stay illuminated only as long as their function button is depressed. The two green auto return function L.E.D's remain illuminated until their actuators have reached their limits and their limit switches have become untripped.

Description of each L.E.D's meaning when illuminated

- The back up relay L.E.D. illuminates to indicate that the PC control board is energizing the back up relay.
- The back down relay L.E.D. illuminates to indicate that the PC control board is energizing the back down relay.
- The base up relay L.E.D. illuminates to indicate that the PC control board is energizing the base up relay.
- The base down relay L.E.D. illuminates to indicate that the PC control board is energizing the base down relay.
- The foot control back up L.E.D. illuminates to indicate that the PC control board is receiving a good signal from the back up foot switch.
- The foot control back down L.E.D. illuminates to indicate that the PC control board is receiving a good signal from the back down foot switch.
- The foot control base up L.E.D. illuminates to indicate that the PC control board is receiving a good signal from the base up foot switch.
- The foot control base down L.E.D. illuminates to indicate that the PC control board is receiving a good signal from the base down foot switch.
- The auto return back function L.E.D. illuminates to indicate that the auto return circuit for the back function is activated. The L.E.D. stays illuminated until the back function has completed its portion of the auto return cycle.
- The auto return base function L.E.D. illuminates to indicate that the auto return circuit for the base function is activated. The L.E.D. stays illuminated until the base function has completed its portion of the auto return cycle.
- There are three Data Line L.E.D.'s; data line #1 L.E.D., data line #2 L.E.D., and data line #3 L.E.D.. Different combinations of these L.E.D's illuminate to indicate if the proper input signal is being sent to the PC control board from the membrane panels or hand control.

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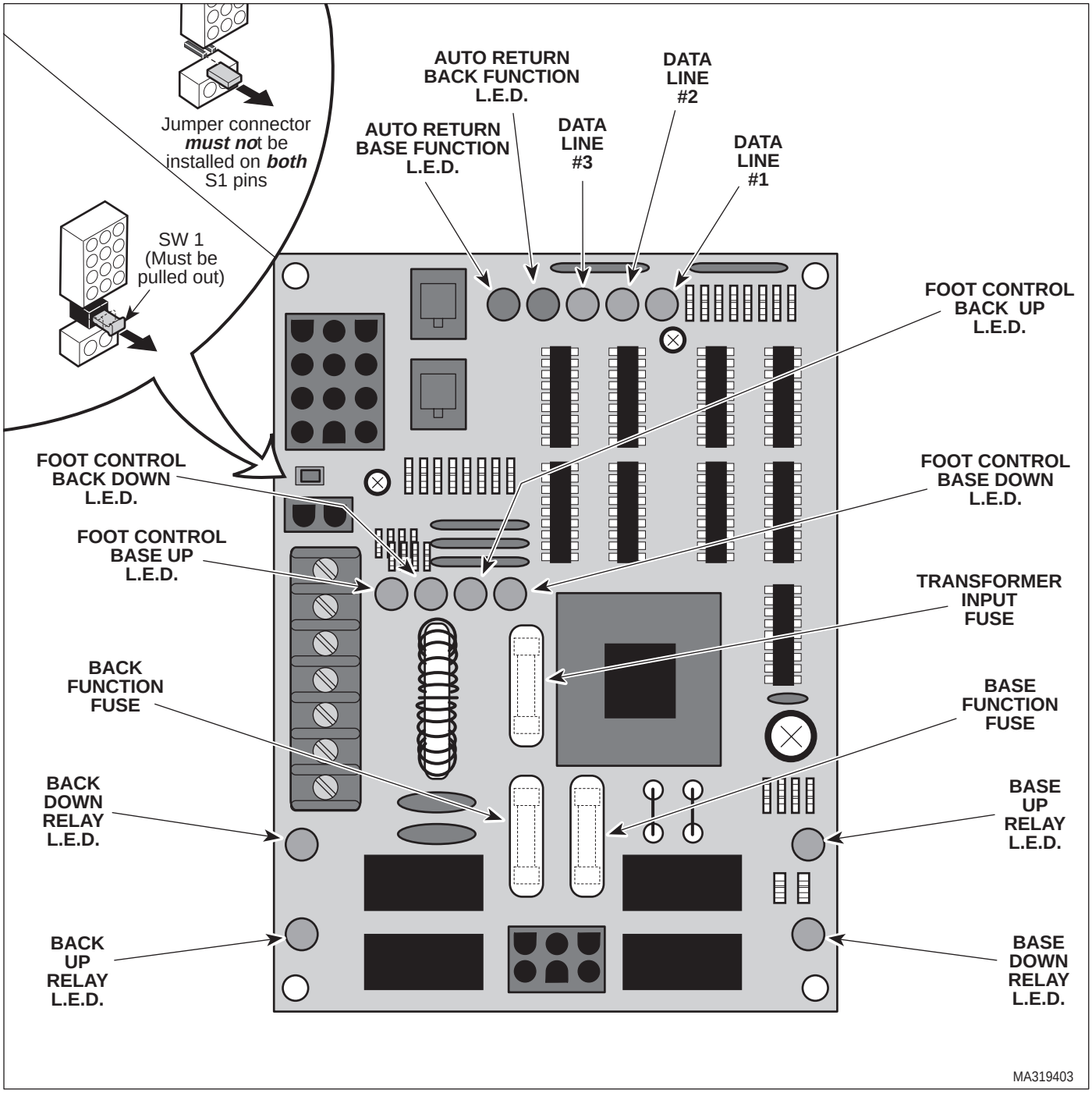

Figure 5-3. Diagnostoc L.E.D. Locations On PC Control Board

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SECTION V
SCHEMATICS AND DIAGRAMS

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SECTION VI
PARTS LIST

6.1 Introduction

The illustrated parts list provides information for identifying and ordering the parts necessary to maintain the unit in peak operating condition. Refer to paragraph 1.5 for parts ordering information.

The parts list also illustrates disassembly and assembly relationships of parts.

6.2 Description of Columns

The *Item* column of the parts list gives a component its own unique number. The same number is given to the component in the parts illustration. This allows a part number of a component to be found if the technician can visually spot the part on the illustration. The technician simply finds the component in question on the illustration and notes the item number of that component. Then, he finds that item number in the parts list. The row corresponding to the item number gives the technician the part number, a description of the component, and quantity of parts per subassembly. Also, if a part number is known, the location of that component can be determined by looking for the item number of the component on the illustration.

The *Part No.* column lists the MIDMARK part number for that component.

The *Description* column provides a physical description of the component.

The *Qty.* column lists the number of units of a particular component that is required for the subassembly. The letters “AR” denote “as required” when quantities of a particular component cannot be determined, such as: adhesive.

Bullets { • } in the *Part No.* column and the *Description* column show the indenture level of a component. If a component does not have a bullet, it is a main component of that illustration. If a component has a bullet, it is a subcomponent of the next component listed higher in the parts list than itself that does not have a bullet. Likewise, if a component has two bullets, it is a subcomponent of the next component listed higher in the parts list than itself that has only one bullet.

6.3 Torque Specifications and Important Assembly Notes

When specific assembly torque specifications, measurements, or procedures have been identified, by our engineering department, as required to assure proper function of the unit, those torque specifications measurements, and procedures will be noted on the parts illustrations. Adherence to these requirements is essential.

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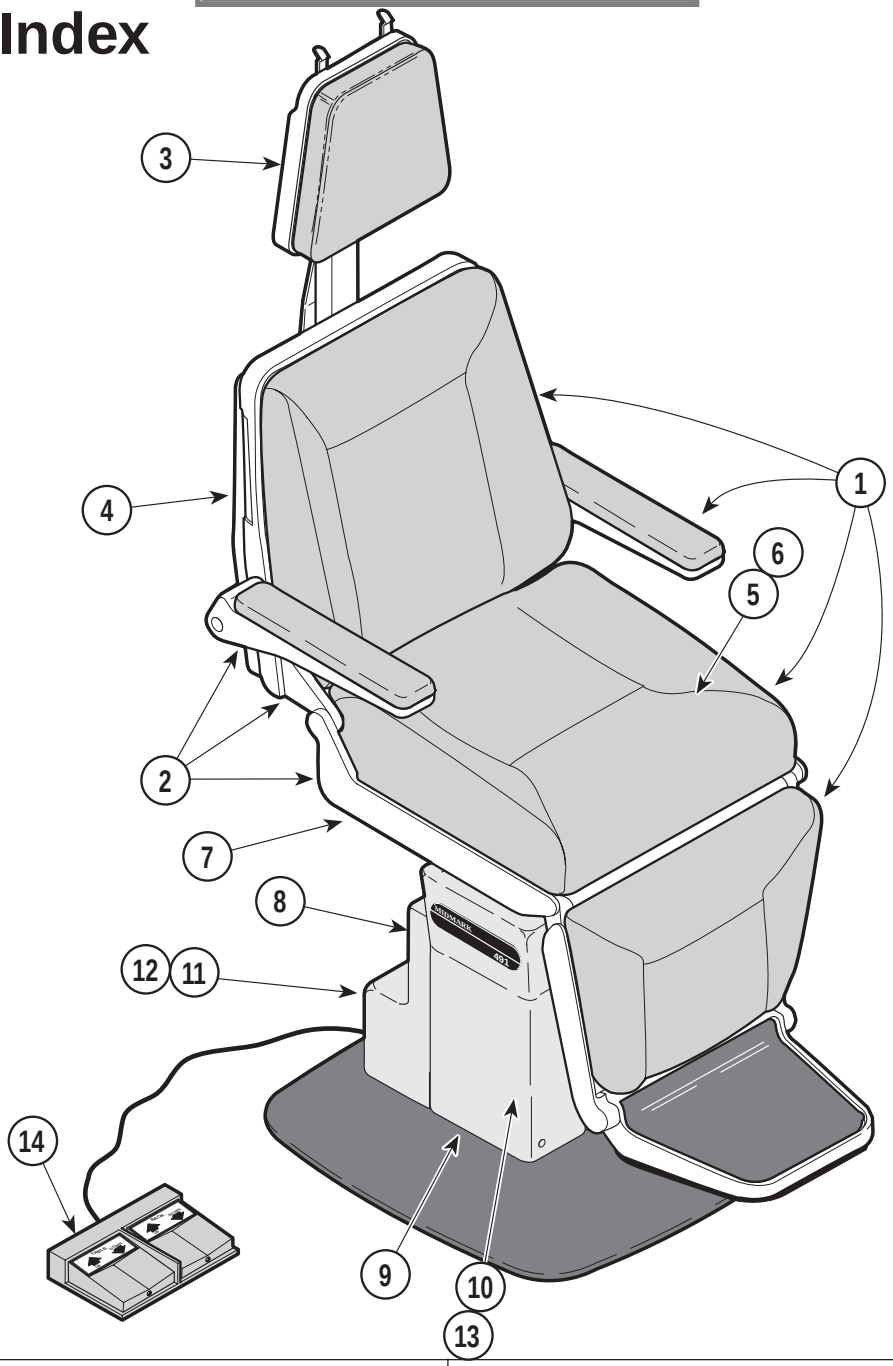
Pictorial Index



MA308201

Item	Part No.	Description	Page
	491-001	Power Otolaryngology Chair (Domestic)	
	491-002	Power Otolaryngology Chair (Export)	
1	•	Upholstery Components	6-3
2	•	• Chair Frame Assembly	6-4
3	•	• Headrest Assembly	6-5
4	•	• Back Mechanism	6-6
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8	•	• Elevation Column Assembly	6-10
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10	•	• Base Actuator Assembly	6-12
11	•	• Receptacle Panel Assembly (Domestic Units Only)	6-13
12	•	• Receptacle Panel Assembly (Export Units Only)	6-14
13	•	• Base Actuator Assembly	6-15

Item	Part No.	Description	Page
		OPTIONAL ACCESSORIES	
		Refer to MEDICAL ACCESSORY BOOK {004-0096-00}	
14	9A89001	Footswitch Assembly	9A89
15	9A133001	Full Headrest Assembly	9A133
16	9A141001	Occipital Headrest Assembly	9A141
17	9A142001	Countoured Headrest Assembly	9A142
18	9A156002	Exam Light Assembly	9A156
19	9A216002	Removable Headrest Bracket Assy.	9A216
20	9A217001	Removable Occipital Headrest Assembly	9A217
21	9A218001	Removable Countoured Headrest Assembly	9A218

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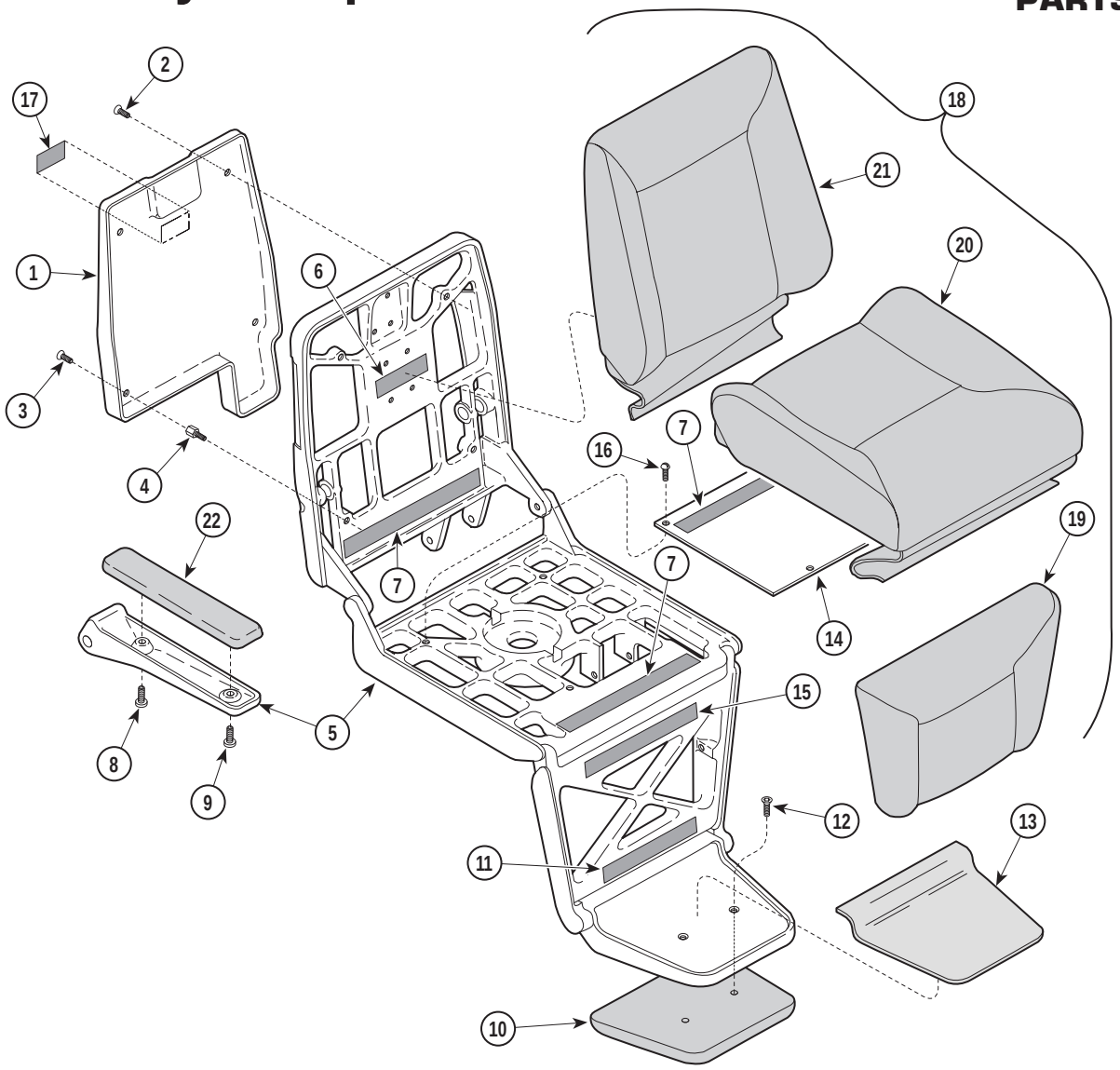
Upholstery Components



MA200300

Used on units with Serial Numbers CT1000 thru CT1148 and DG1000 thru DG1004

Item	Part No.	Description	Qty.
1	053-0364-00	Back Cover	1
2	040-0010-57	Screw	2
3	040-0010-58	Screw	2
4	015-0599-00	Standoff	4
5		Chair Frame (Refer to "Chair Frame Assembly" Elsewhere)	Ref
6	053-0328-05	Velcro Tape	1
7	053-0328-03	Velcro Tape	3
8	042-0059-02	Joint Connector Bolt	2
9	042-0059-06	Joint Connector Bolt	2
10	028-0272-00	Upholstered Foot Pad	1
11	053-0328-02	Velcro Tape	1
12	040-0010-28	Screw	2
13	053-0579-00	Step Tread	1
14	050-1732-10	Seat Cover	1
15	053-0328-06	Velcro Tape	1
16	040-0250-18	Screw	3
17	061-0033-00	Caution Label	1
18	002-0348-XX	Upholstered Set (Includes Items 19 thru 23 [Specify Color])	1
19	• 028-0269-XX	• Upholstered Leg (Specify Color)	1
20	• 028-0270-XX	• Upholstered Seat (Specify Color)	1
21	• 028-0271-XX	• Upholstered Back (Specify Color)	1
22	• 028-0268-XX	• Upholstered Arm (Specify Color)	2
23	• 028-0141-XX	• Upholstered Headrest ([Not Shown / Initially Supplied as an Accessory] {Specify Color})	1
		{ * }The following are the current stock upholstery color dash (xx) numbers.	
	XX-XXXX-19	Truffle Upholstery	AR
	XX-XXXX-41	Colonial Blue Upholstery	AR
	XX-XXXX-42	Blush Upholstery	AR
	XX-XXXX-61	Chocolate Brown Upholstery (No Longer Available)	AR
	XX-XXXX-62	Rich Burgandy Upholstery	AR
	XX-XXXX-63	Turquoise Upholstery	AR
	XX-XXXX-64	Pearl Grey Upholstery	AR

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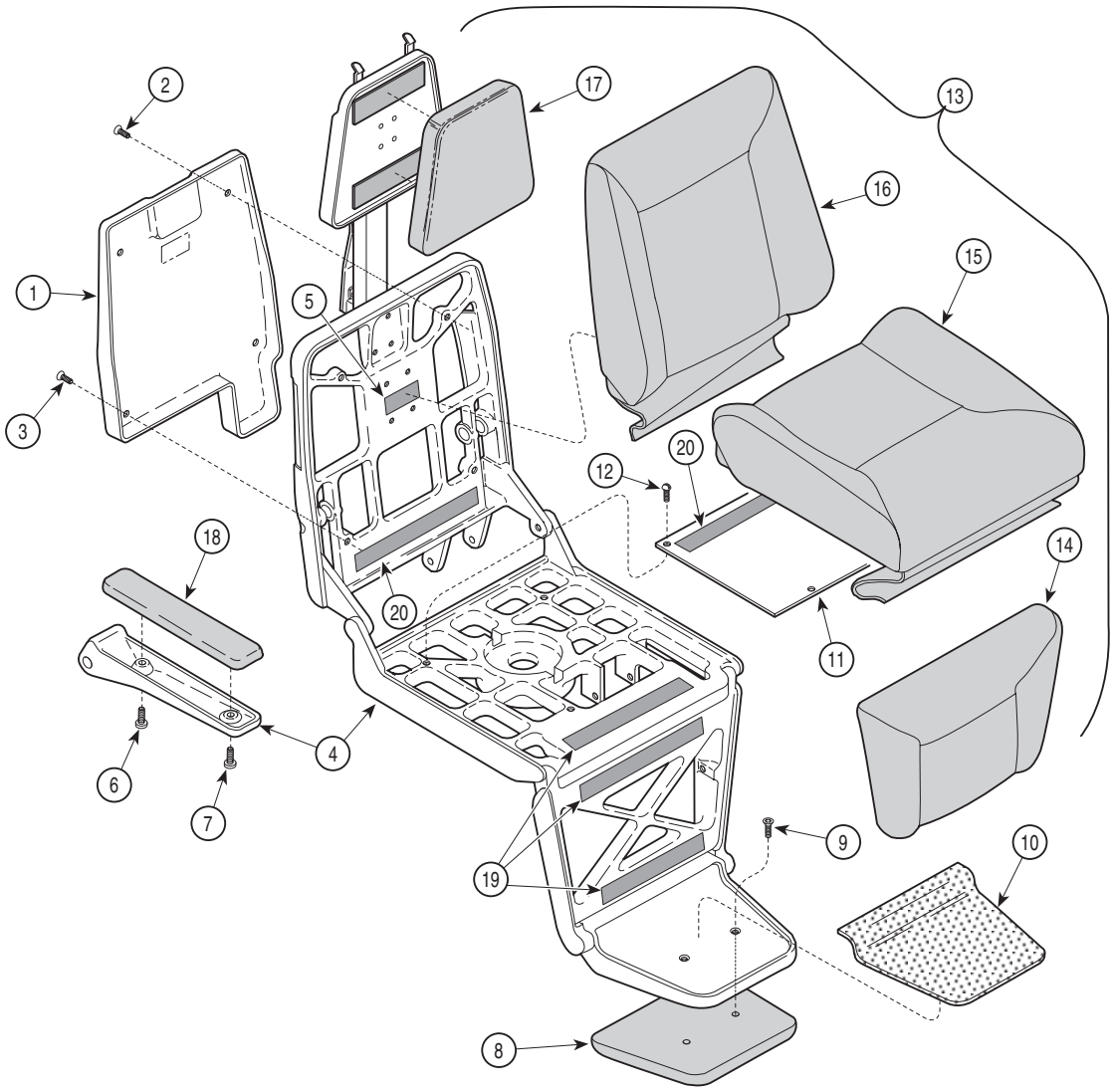
Upholstery Components



KIT UPHOLSTERY COLOR CODES [replaces -xxx]
-19 ..... Truffle
-41 ..... Colonial Blue
-42 ..... Blush
-62 ..... Rich Burgandy
-63 ..... Turquoise
-64 ..... Pearl Grey
-80 ..... Monoco
-81 ..... Wedgewood
-82 ..... Royal Carriage
-83 ..... Monet
-84 ..... Soft Pearl
-85 ..... English Gardens
-86 ..... Waterford
-87 ..... Cabernet
-88 ..... Tapestry
-89 ..... Cathedral
-235 ..... Blueberry
-236 ..... Silver Sage
-237 ..... Tea Green
-238 ..... Fossil
-239 ..... Cashmere Blue
-240 ..... Terra Cotta
-247 ..... Belagio
-248 ..... Siena
-249 ..... Tuscany
-250 ..... Firenze
-251 ..... Capri
-252 ..... Treviso
-999 ..... Special

MA200302

Used on units with Serial Numbers CT1148 and DG1005 thru Present
Used on units with Serial Numbers V2200 thru Present

Item	Part No.	Description	Qty.
1	053-0364-00	Back Cover	1
2	040-0010-57	Screw	2
3	040-0010-58	Screw	2
4		Chair Frame (Refer to "Chair Frame Assembly" Elsewhere)	Ref
5	053-0131-11	Velcro Tape	1
6	042-0059-02	Joint Connector Bolt	2
7	042-0059-06	Joint Connector Bolt	2
8	028-0272-00	Upholstered Foot Pad	1
9	040-0010-28	Screw	2
10	053-0579-00	Step Tread	1
11	050-1732-10	Seat Cover	1
12	040-0250-18	Screw	3
13	002-0348-XX	Upholstered Set (Includes Items 14 thru 18 [Specify Color])	1
14	• 028-0269-XX	• Upholstered Leg (Specify Color)	1
15	• 028-0270-XX	• Upholstered Seat (Specify Color)	1
16	• 028-0271-XX	• Upholstered Back (Specify Color)	1
17	• 028-0141-XX	• Upholstered Headrest (Specify Color)	1
18	• 028-0268-XX	• Upholstered Arm (Specify Color)	2
19	053-0131-00	Velcro Tape	1
20	053-0131-02	Velcro Tape	4

{ * }Refer to chart for stock upholstery color dash (xx) numbers.

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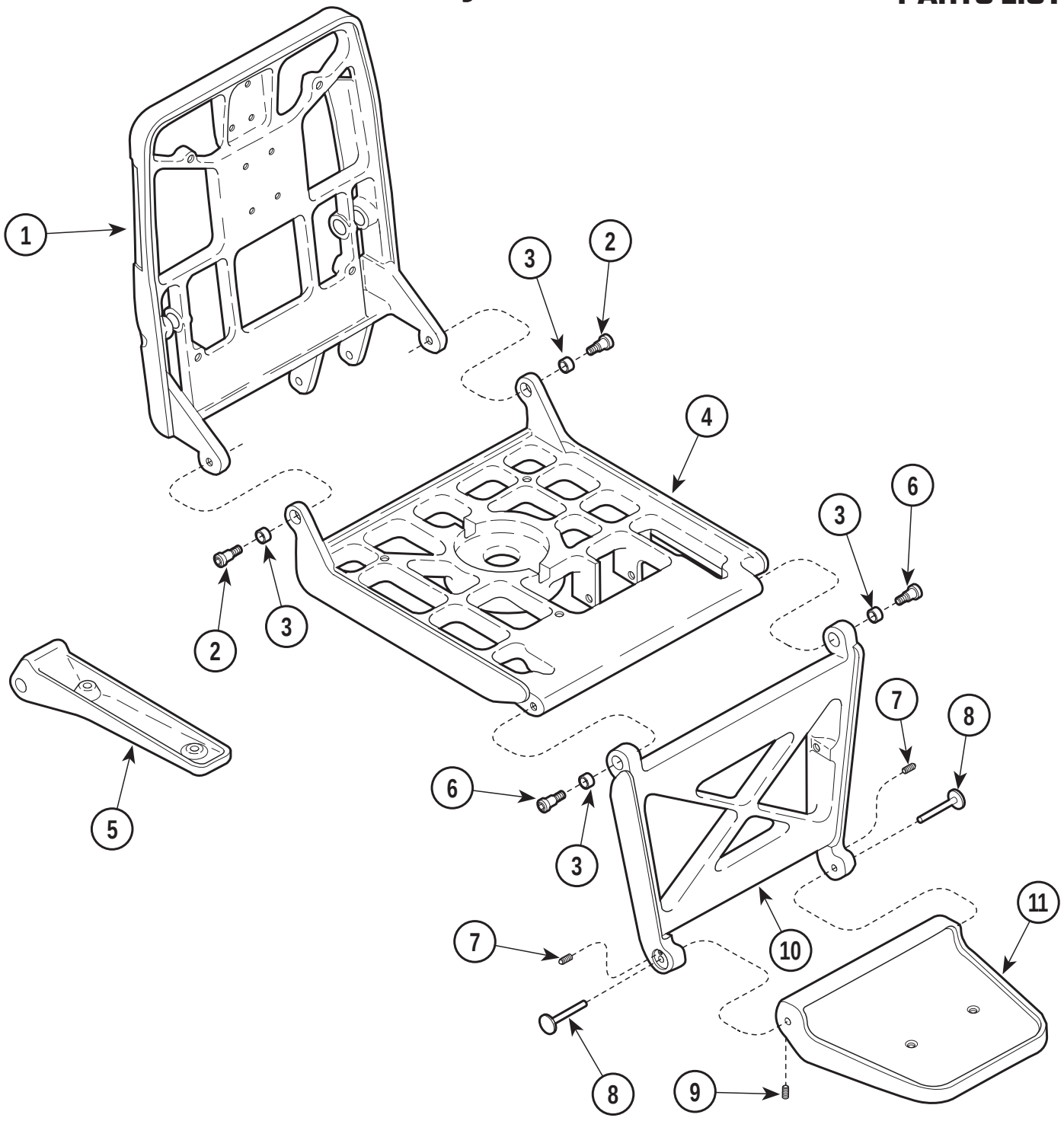
Chair Frame Assembly



MA200200

Used on units with Serial Numbers CT1000 thru CT1148 and DG1000 thru DG1004

Item	Part No.	Description	Qty.
1	020-0118-10	Back Casting	1
2	042-0014-00	Shoulder Screw	2
3	016-0076-00	D.U. Bushing	4
4	020-0079-10	Seat Casting	1
5	020-0081-10	Arm Casting	2
6	042-0014-15	Shoulder Screw	2
7	016-0421-00	Ball Plunger	2
8	030-0692-00	Pin Weldment	2
9	040-0250-04	Set Screw	2
10	020-0077-10	Leg Casting	1
11	020-0147-02	Foot Casting	1

Always Specify Model & Serial Number

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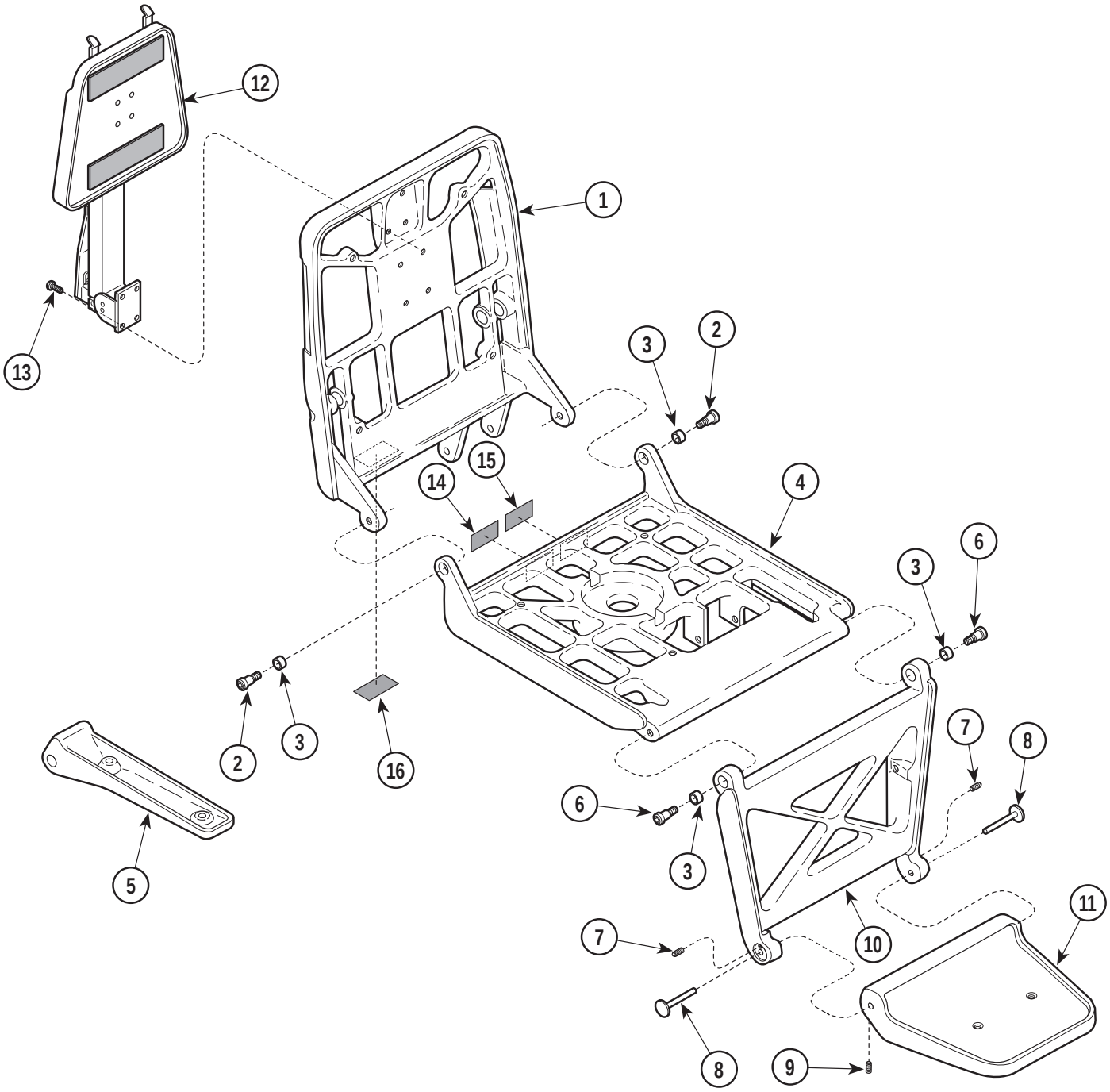
Chair Frame Assembly



MA200201

Used on units with Serial Numbers CT1148 thru CT1354 and DG1005 thru DG1099

Item	Part No.	Description	Qty.
1	020-0118-02	Back Casting	1
2	042-0014-00	Shoulder Screw	2
3	016-0076-00	D.U. Bushing	4
4	020-0079-02	Seat Casting	1
5	020-0081-02	Arm Casting	2
6	042-0014-15	Shoulder Screw	2
7	016-0421-00	Ball Plunger	2
8	030-0692-00	Pin Weldment	2
9	040-0250-04	Set Screw	2
10	020-0077-02	Leg Casting	1
11	020-0147-02	Foot Casting	1
12		Headrest Assembly (Refer to "Headrest Assembly" Elsewhere)	Ref
13	040-0250-104	Screw	4
14	061-0301-00	U.L. Label (Domestic Units Only)	1
15	061-0506-00	C.S.A. Label (Domestic Units Only)	1
16		Serial Number Label	1

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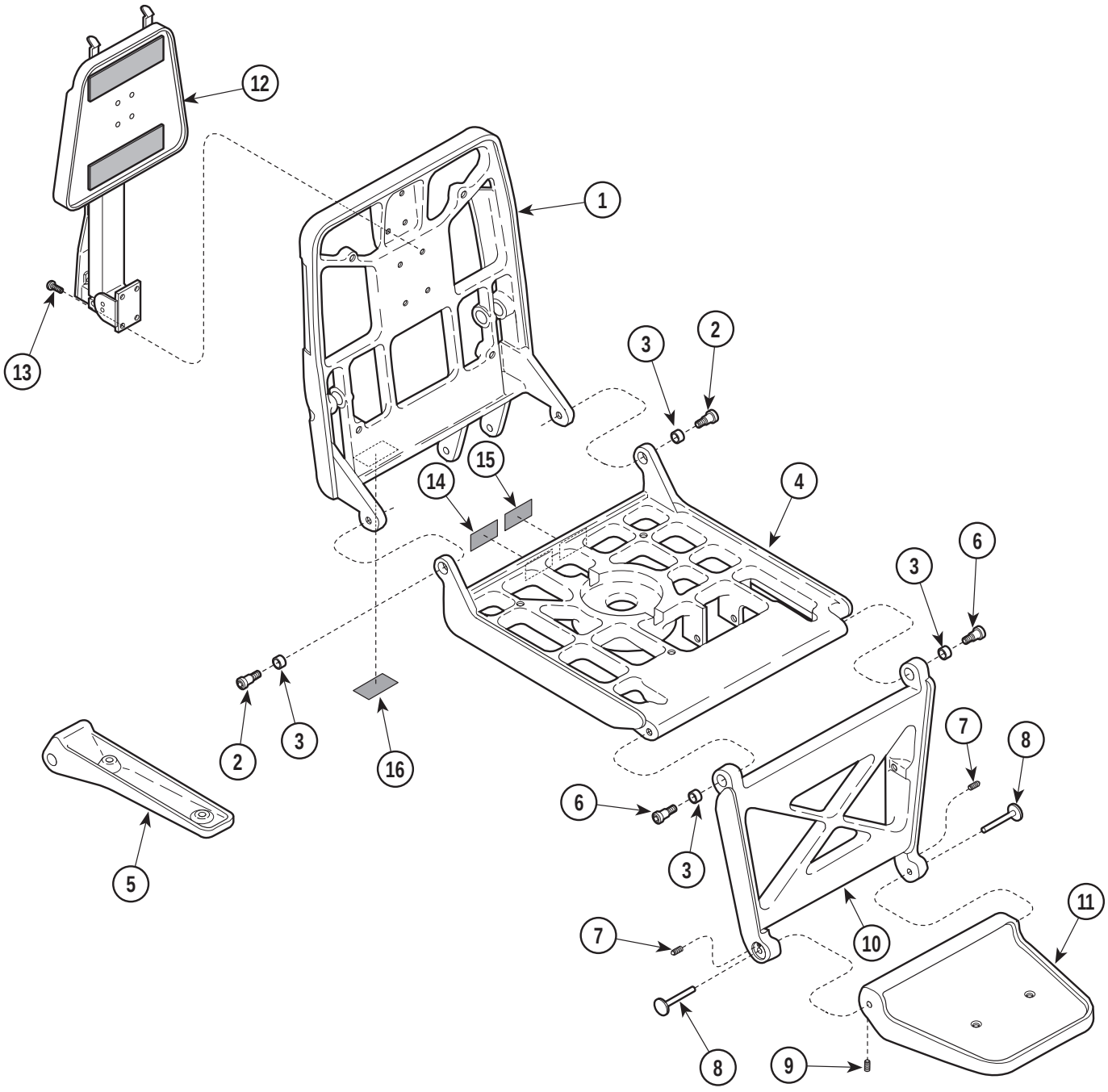
Chair Frame Assembly



MA200201

Used on units with Serial Numbers CT1355 thru CT1435 and DG1100 thru DG1103

Item	Part No.	Description	Qty.
1	020-0118-02	Back Casting	1
2	042-0014-00	Shoulder Screw	2
3	016-0076-00	D.U. Bushing	4
4	020-0137-00	Seat Casting	1
5	020-0081-02	Arm Casting	2
6	042-0014-15	Shoulder Screw	2
7	016-0421-00	Ball Plunger	2
8	030-0692-00	Pin Weldment	2
9	040-0250-04	Set Screw	2
10	020-0077-02	Leg Casting	1
11	020-0147-02	Foot Casting	1
12		Headrest Assembly (Refer to "Headrest Assembly" Elsewhere)	Ref
13	040-0250-104	Screw	4
14	061-0301-00	U.L. Label (Domestic Units Only)	1
15	061-0506-00	C.S.A. Label (Domestic Units Only)	1
16		Serial Number Label	1

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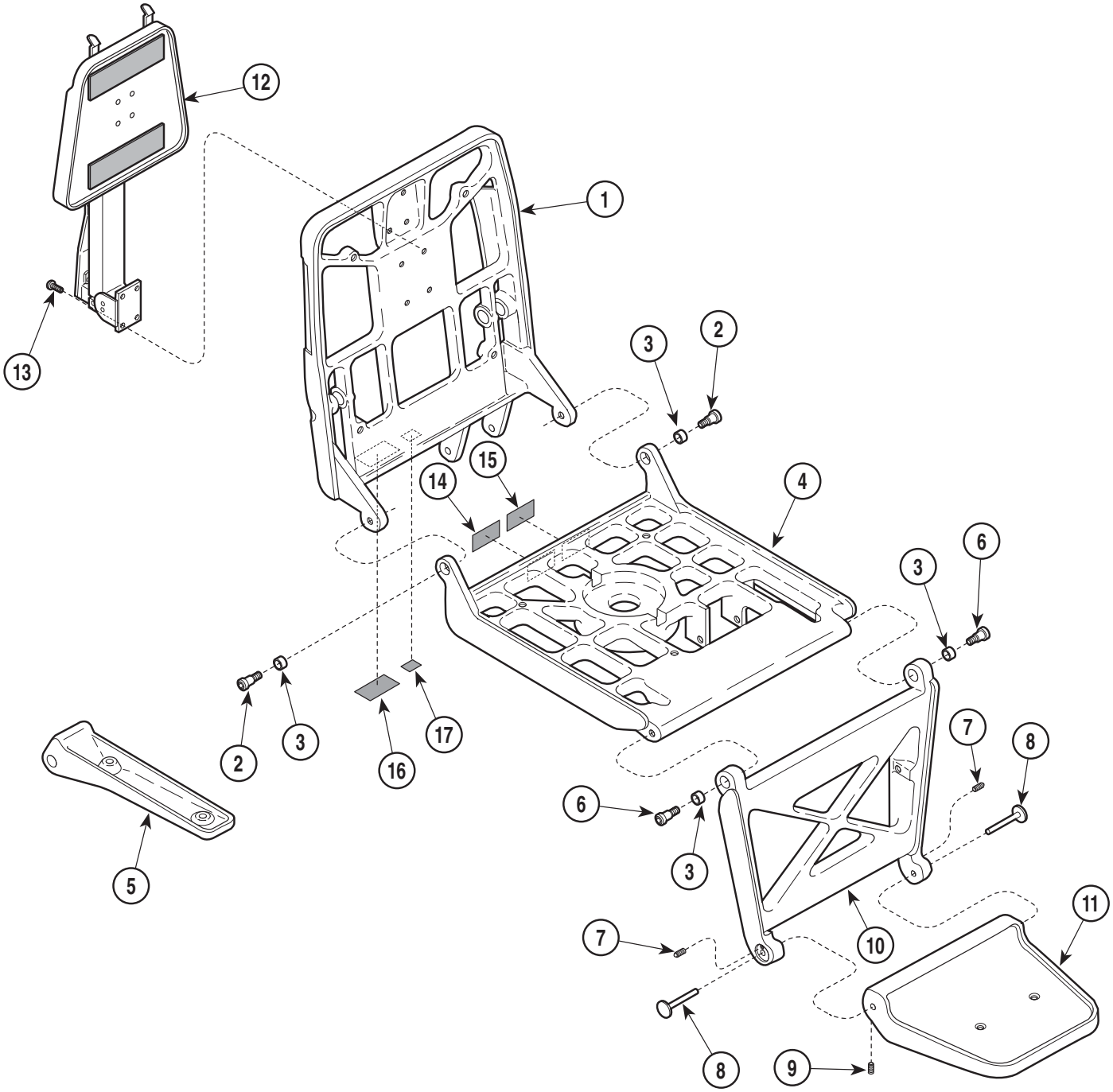
Chair Frame Assembly



MA200201

Used on units with Serial Numbers CT1436 thru CT2959 and DG1104 thru DG1388

Item	Part No.	Description	Qty.
1	020-0118-02	Back Casting	1
2	042-0014-00	Shoulder Screw	2
3	016-0076-00	D.U. Bushing	4
4	020-0137-00	Seat Casting	1
5	020-0142-00	Arm Casting	2
6	042-0014-15	Shoulder Screw	2
7	016-0421-00	Ball Plunger	2
8	030-0692-00	Pin Weldment	2
9	040-0250-04	Set Screw	2
10	020-0077-02	Leg Casting	1
11	020-0147-02	Foot Casting	1
12		Headrest Assembly (Refer to "Headrest Assembly" Elsewhere)	Ref
13	040-0250-104	Screw	4
14	061-0301-00	U.L. Label (Domestic Units Only)	1
15	061-0506-00	C.S.A. Label (Domestic Units Only)	1
16		Serial Number Label	1
17	061-0590-00	CE Mark Label (Export Units Only)	1

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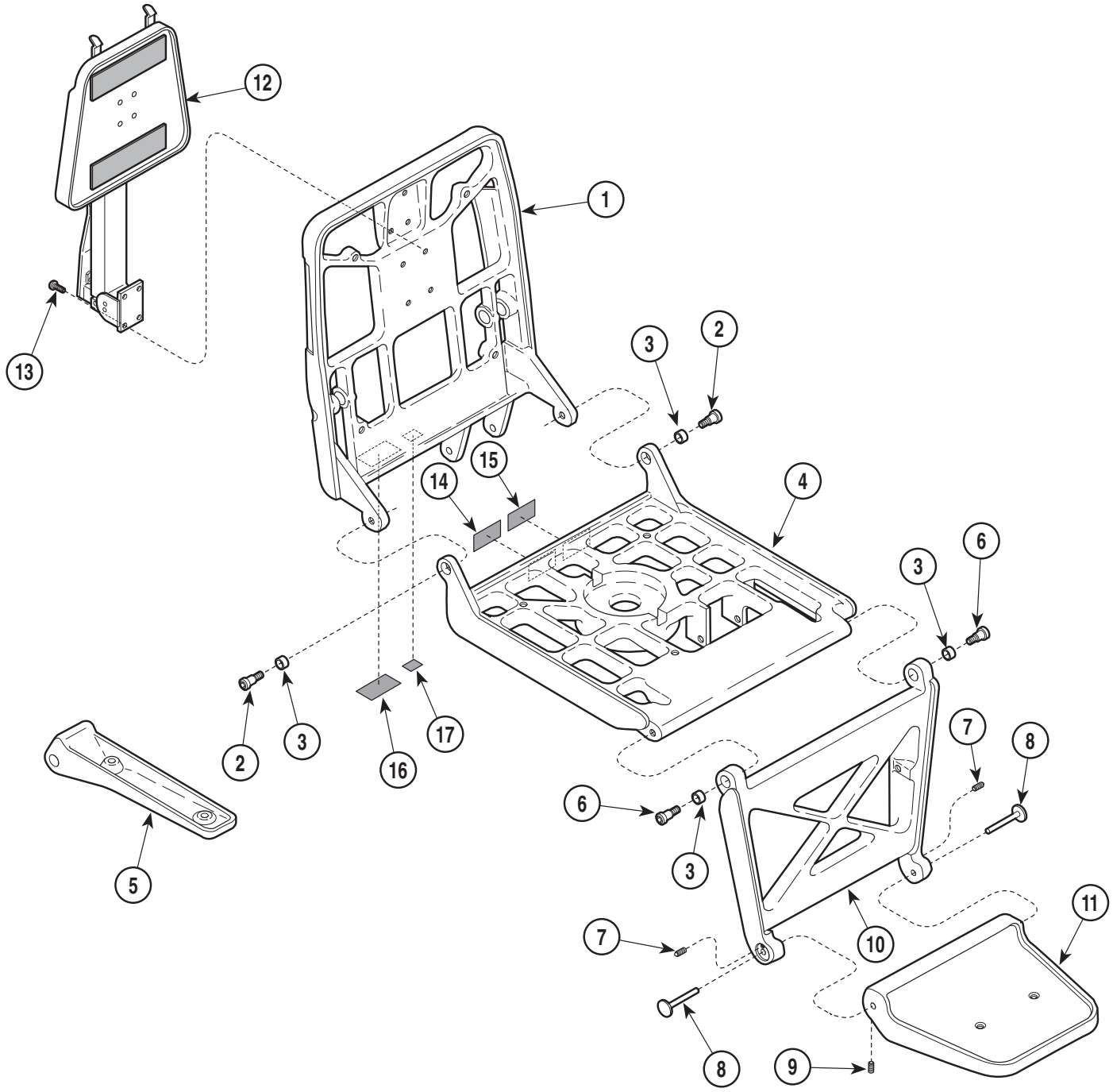
Chair Frame Assembly



MA200201

Used on units with Serial Numbers CT2960 & DG1389 thru CT3480 & DG1474

Item	Part No.	Description	Qty.
1	020-0190-00	Back Casting	1
2	042-0014-00	Shoulder Screw	2
3	016-0076-00	D.U. Bushing	4
4	020-0137-00	Seat Casting	1
5	020-0142-00	Arm Casting	2
6	042-0014-15	Shoulder Screw	2
7	016-0421-00	Ball Plunger	2
8	030-0692-00	Pin Weldment	2
9	040-0250-04	Set Screw	2
10	020-0077-02	Leg Casting	1
11	020-0147-02	Foot Casting	1
12		Headrest Assembly (Refer to "Headrest Assembly" Elsewhere)	Ref
13	040-0250-104	Screw	4
14	061-0301-00	U.L. Label (Domestic Units Only)	1
15	061-0506-00	C.S.A. Label (Domestic Units Only)	1
16		Serial Number Label	1
17	061-0590-00	CE Mark Label (Export Units Only)	1

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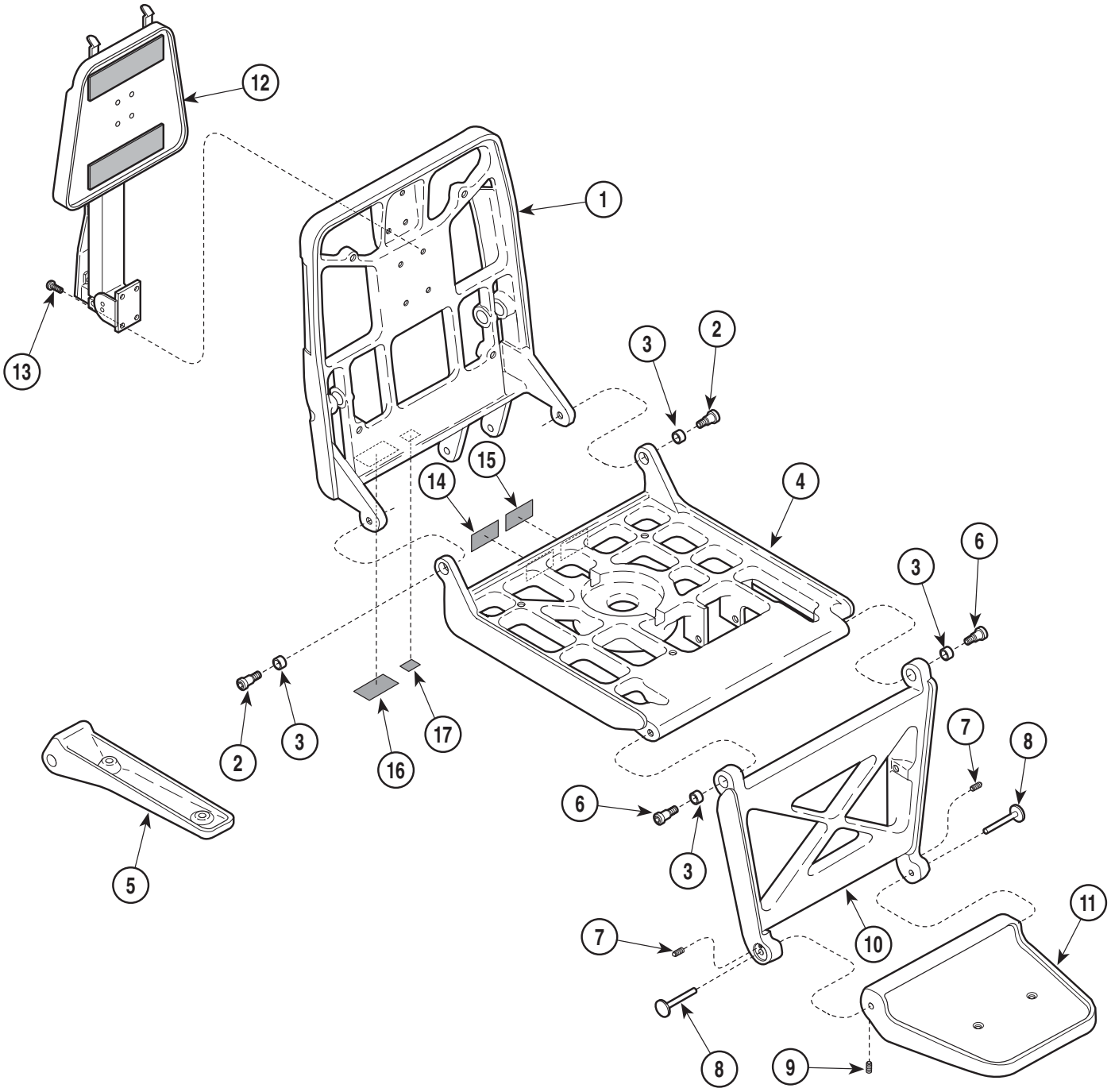
Chair Frame Assembly



MA200201

Used on units with Serial Numbers CT3481 thru CT3629 thru Present

Item	Part No.	Description	Qty.
1	020-0190-02	Back Casting	1
2	042-0014-00	Shoulder Screw	2
3	016-0076-00	D.U. Bushing	4
4	020-0137-02	Seat Casting	1
5	020-0142-00	Arm Casting	2
6	042-0014-15	Shoulder Screw	2
7	016-0421-00	Ball Plunger	2
8	030-0692-00	Pin Weldment	2
9	040-0250-04	Set Screw	2
10	020-0077-02	Leg Casting	1
11	020-0147-02	Foot Casting	1
12		Headrest Assembly (Refer to "Headrest Assembly" Elsewhere)	Ref
13	040-0250-104	Screw	4
14	061-0301-00	U.L. Label (Domestic Units Only)	1
15	061-0506-00	C.S.A. Label (Domestic Units Only)	1
16		Serial Number Label	1
17	061-0590-00	CE Mark Label (Export Units Only)	1

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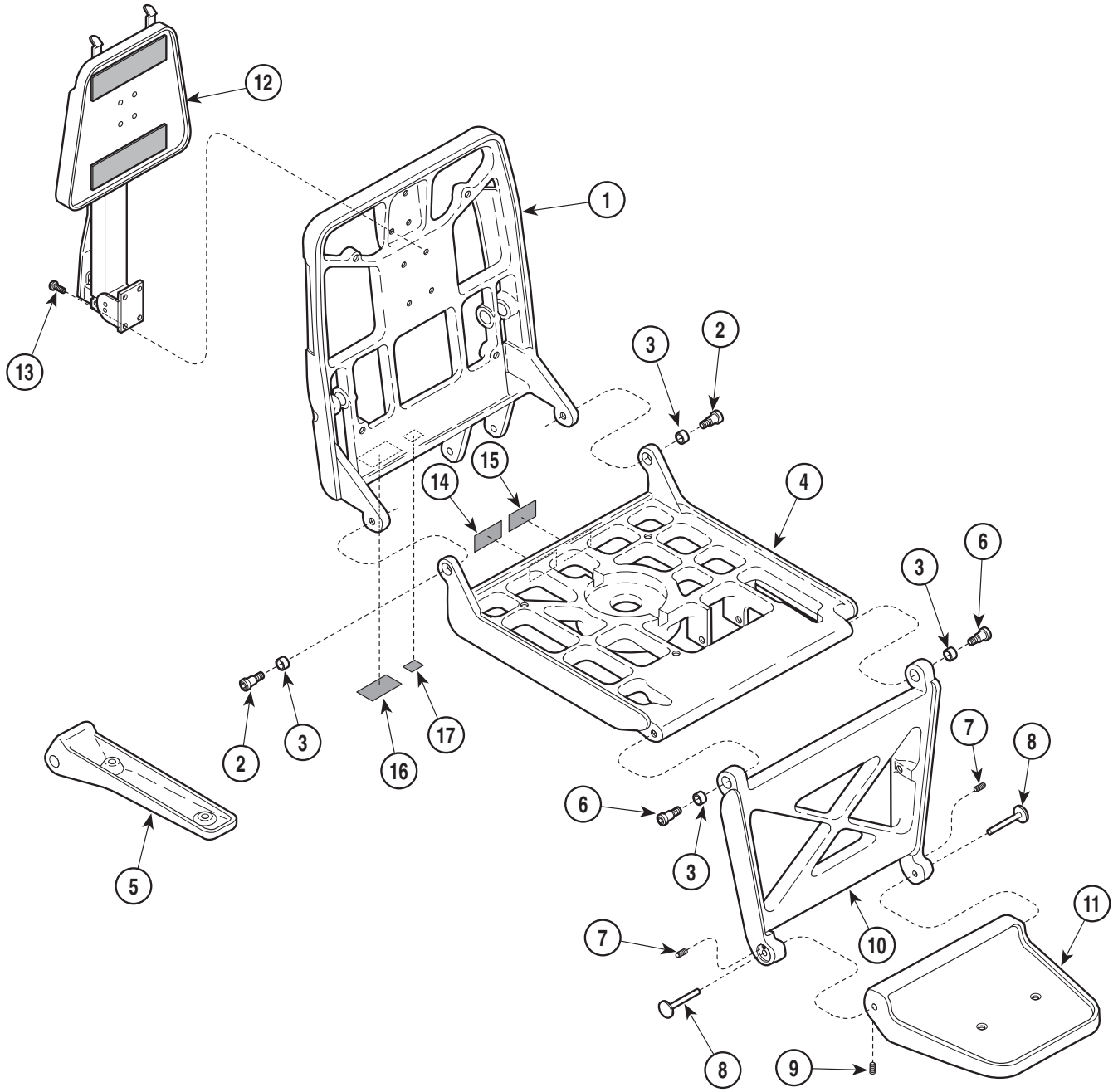
Chair Frame Assembly



MA200201

Used on units with Serial Numbers CT3630 & DG1475 thru Present
Used on units with Serial Numbers V2200 thru Present

Item	Part No.	Description	Qty.
1	020-0190-02	Back Casting	1
2	042-0014-00	Shoulder Screw	2
3	016-0076-00	D.U. Bushing	4
4	020-0137-02	Seat Casting	1
5	020-0142-00	Arm Casting	2
6	042-0014-15	Shoulder Screw	2
7	016-0421-00	Ball Plunger	2
8	030-0692-00	Pin Weldment	2
9	040-0250-04	Set Screw	2
10	020-0077-02	Leg Casting	1
11	020-0147-02	Foot Casting	1
12		Headrest Assembly (Refer to "Headrest Assembly" Elsewhere)	Ref
13	040-0250-104	Screw	4
14	061-0301-00	U.L. Label (Domestic Units Only)	1
15		C.S.A. Label (Only Used on Domestic Units Prior to 04-01-2005)	1
16		Serial Number Label	1
17	061-0665-00	CE Mark Label (Export Units Only)	1

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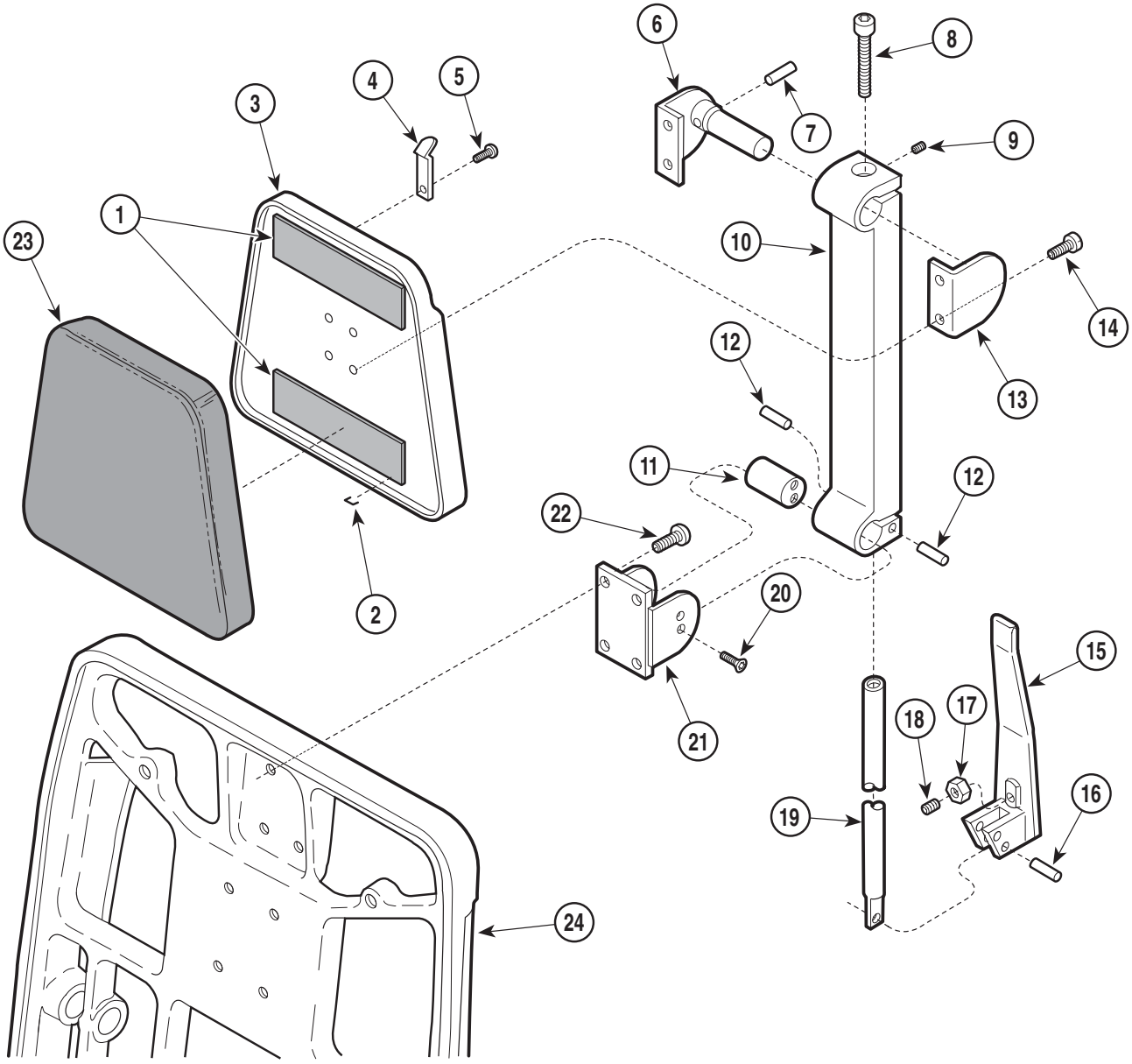
Headrest Assembly



MA201101

Used on units with Serial Numbers CT1000 thru CT3922 and DG1000 thru DG1540

Item	Part No.	Description	Qty.
	029-1495-00	Headrest Assembly (Includes Items 1 thru 21)	1
1	• 053-0131-08	• Velcro Tape	2
2	• *(N.S.P.)*	• Staple	16
3	• 029-0699-00	• Head Board Assembly	1
4	• 058-0001-03	• Bag Holder	2
5	• 040-0006-00	• Screw	2
6	• 029-0103-11	• Head Board Pivot Assembly (Includes Item 7)	2
7	• • 042-0001-00	• • Roll Pin	1
8	• *(N.S.P.)*	• Cap Screw	1
9	• *(N.S.P.)*	• Set Screw	1
10	• *(N.S.P.)*	• Headlock - ENT	1
11	• *(N.S.P.)*	• Pivot Bar	1
12	• *(N.S.P.)*	• Dowel Pin	2
13	• 030-0124-12	• Head Board Pivot Assembly	1
14	• 040-0010-23	• Screw	4
15	• *(N.S.P.)*	• Head Pivot Handle Weldment	1
16	• *(N.S.P.)*	• Dowle Pin	1
17	• *(N.S.P.)*	• Jam Nut	1
18	• *(N.S.P.)*	• Set Screw	1
19	• *(N.S.P.)*	• Draw Bar	1
20	• 040-0250-54	• Screw (Apply Loctite #042-0025-00)	4
21	• 050-2570-10	• Pivot Bracket	1
22	040-0250-104	Screw	4
23		Upholstered Headrest (Refer to "Upholstery Components" Elsewhere)	Ref
24		Back Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref

(N.S.P.) Denotes "Non Servicable Part"
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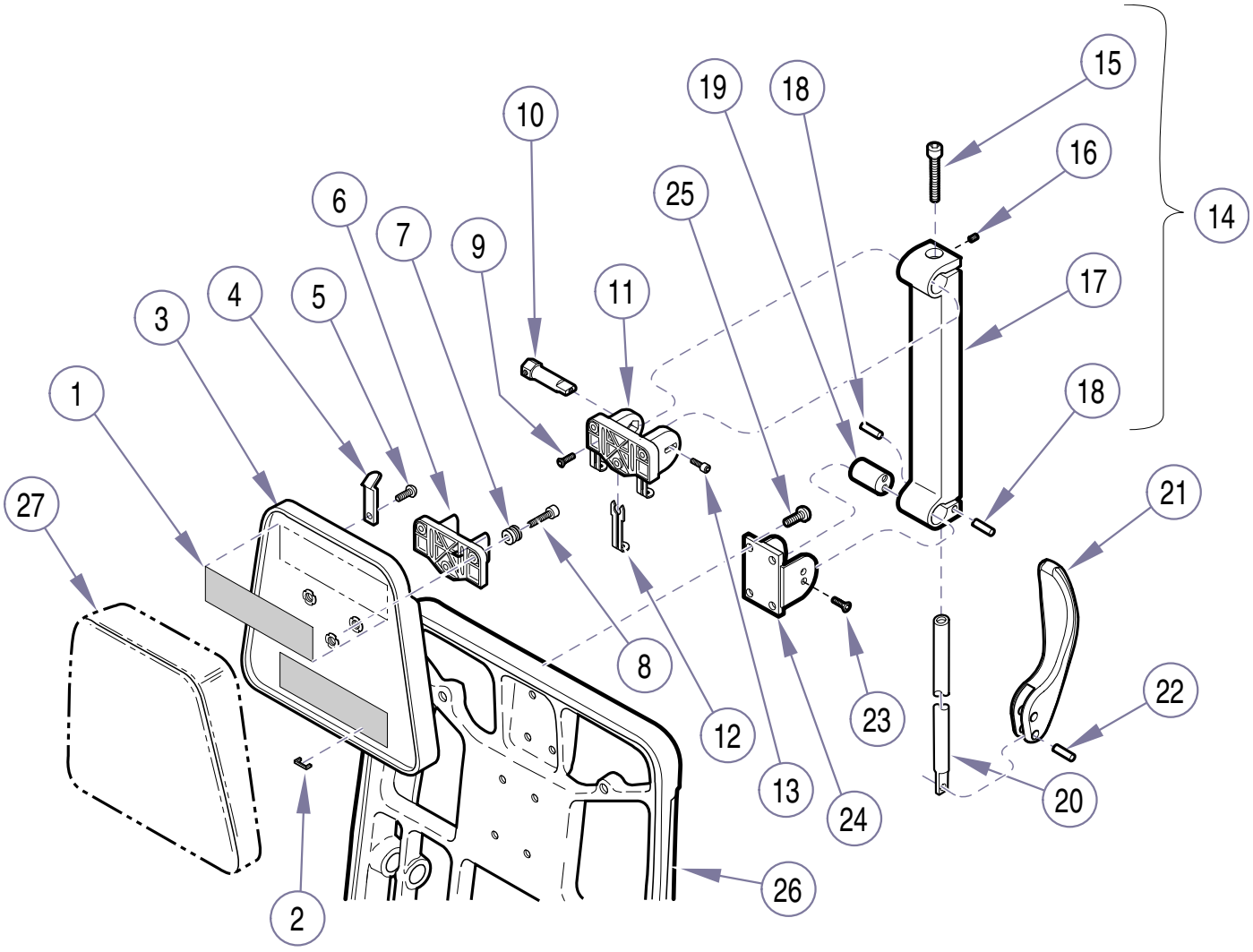
Headrest Assembly



MA644900i

Used on units with Serial Numbers CT3923 and DG1541 thru Present
Used on units with Serial Numbers V2200 thru Present

Item	Part No.	Description	Qty.
	029-3195-00	Headrest Assembly (Includes Items 1 thru 24)	1
1	• 053-0131-08	• Velcro Hook	2
2	• 042-0040-00	• Staple	AR
3	• 029-1788-00	• Head Board Assembly	1
4	• 058-0001-03	• Bag Clamp	2
5	• 040-0006-00	• Screw	2
6	• 053-0582-00	• Headboard Pillow Mount	1
7	• 042-0137-00	• Upholstery Stud Mount	3
8	• 040-0010-13	• Screw	3
9	• 040-0008-35	• Screw	1
10	• 057-0528-00	• Headboard Pivot Pin	1
11	• 053-1047-00	• Black Headboard Pivot Mount	1
12	• 016-0542-01	• Slide Bar	3
13	• 040-0250-79	• Screw	1
14	• 029-3196-00	• Headlock Assembly, One Arm (Includes Items 15 thru 22)	1
15	•• *(N.S.P.)*	•• Cap Screw	1
16	•• *(N.S.P.)*	•• Set Screw	1
17	•• *(N.S.P.)*	•• Headlock Weldment	1
18	•• *(N.S.P.)*	•• Dowel Pin	2
19	•• *(N.S.P.)*	•• Pivot Bar	1
20	•• *(N.S.P.)*	•• Draw Bar	1
21	•• *(N.S.P.)*	•• Over Center Handle	1
22	•• *(N.S.P.)*	•• Dowel Pin	2
23	• 040-0250-139	• Screw (Apply Loctite #042-0024-00)	4
24	• 050-2570-10	• Pivot Bracket	1
25	040-0250-104	Screw	4
26		Back Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref
27		Upholstered Headrest (Refer to "Upholstery Components" Elsewhere)	Ref

(N.S.P.) Denotes "Non Servicable Part"
Always Specify Model & Serial Number

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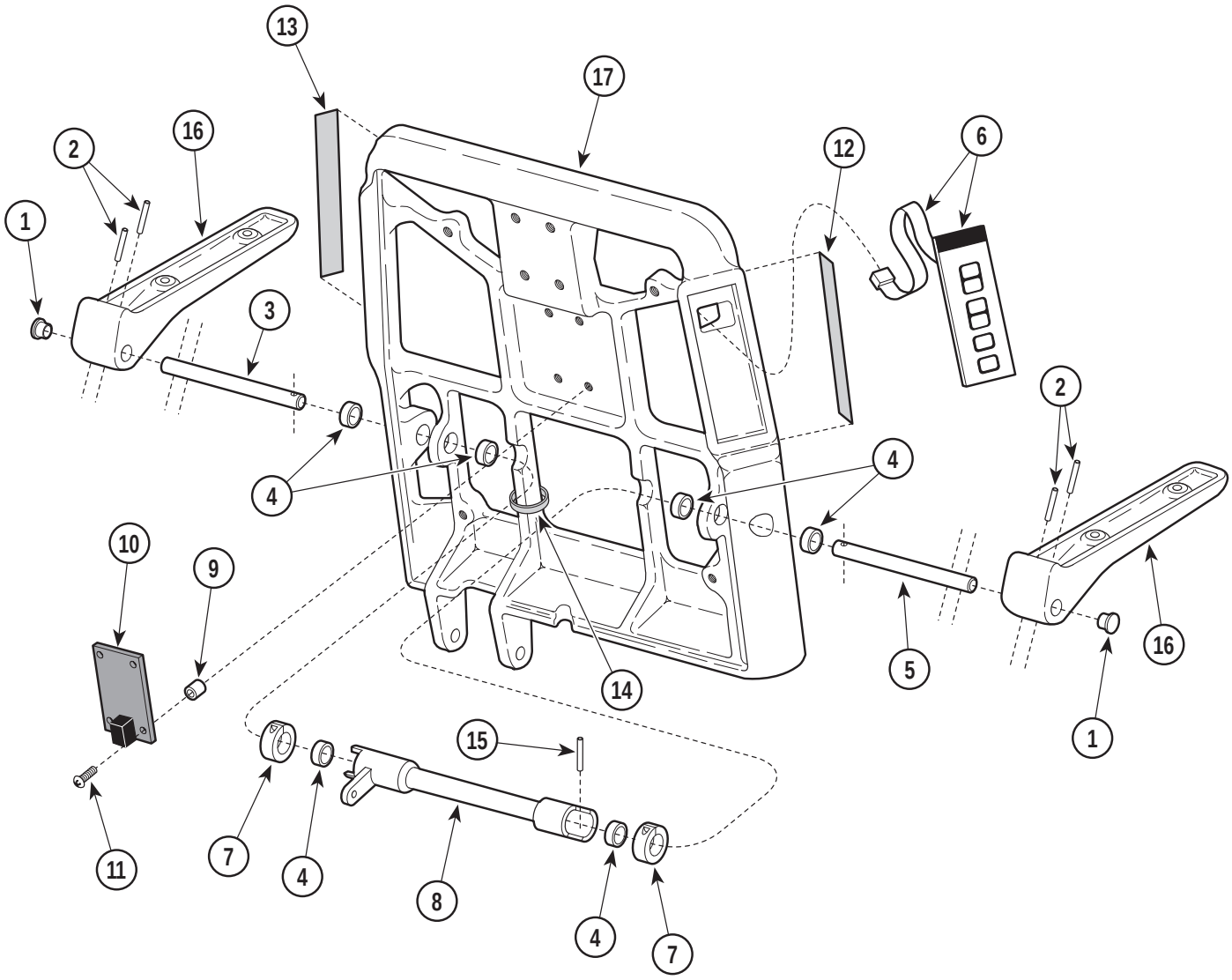
Back Mechanism



MA200400

Used on units with Serial Numbers CT1000 thru CT1435 and DG1000 thru DG1103

Item	Part No.	Description	Qty.
1	053-0050-04	Hole Plug	2
2	042-0043-00	Groove Pin	4
3	057-0248-00	L.H. Arm Shaft	1
4	016-0076-03	D.U. Bushing (Apply Loctite #K906111 to O.D. of Bushing)	6
5	057-0247-00	R.H. Arm Shaft	1
6	015-0721-00	Membrane Switch	2
7	016-0417-00	Split Collar	2
8	030-0686-00	Arm Stop Weldment	1
9	015-0718-00	Nylon Spacer	4
10	015-0712-00	Diode PC Board	1
11	040-0010-46	Screw	4
12	061-0317-00	R.H. Control Decal	1
13	061-0317-01	L.H. Control Decal	1
14	015-0013-00	Cable Tie	1
15	042-0043-00	Groove Pin	2
16		Arm Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref
17		Back Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref

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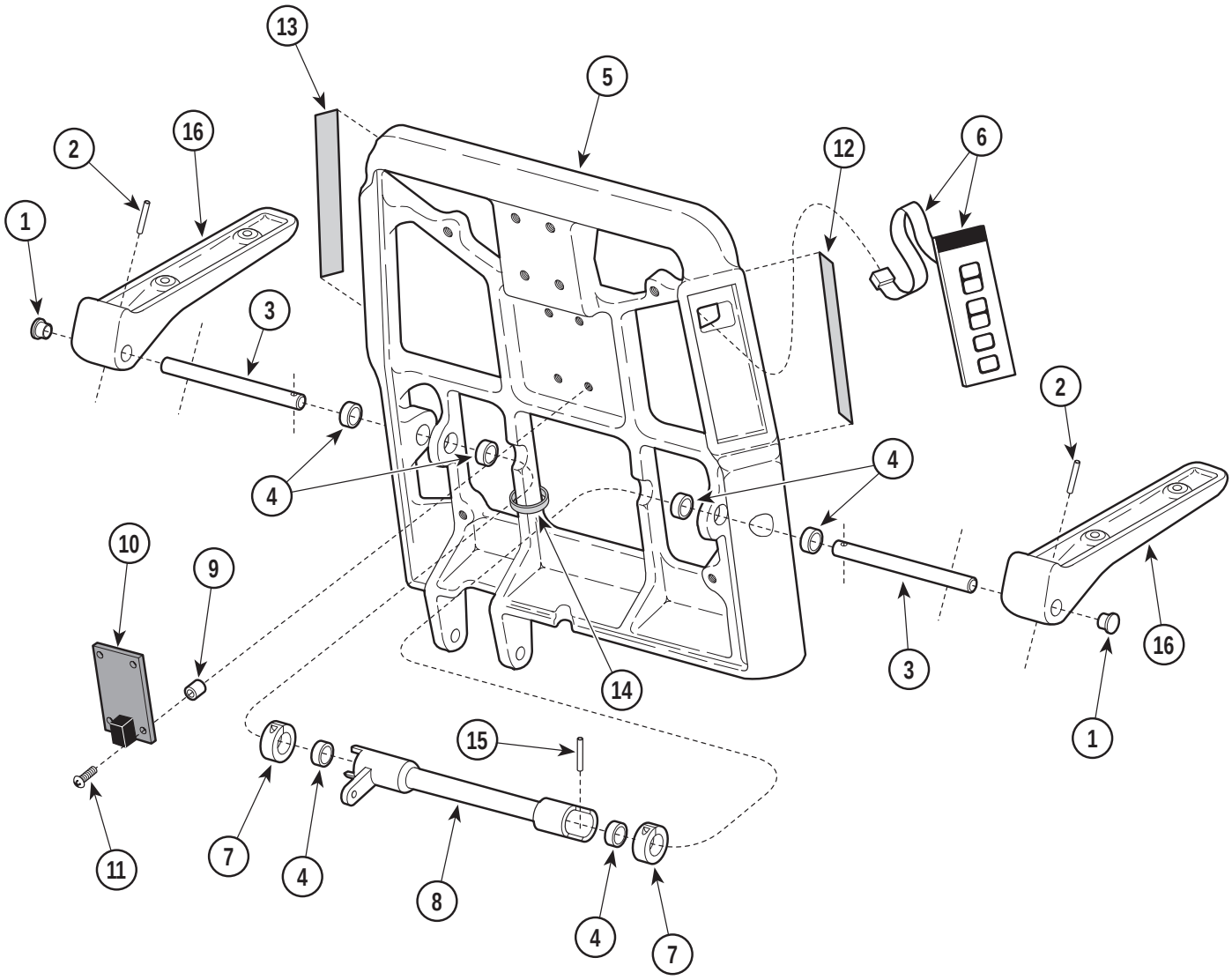
Back Mechanism



MA200401

Used on units with Serial Numbers CT1436 thru CT2959 and DG1104 thru DG1388

Item	Part No.	Description	Qty.
1	053-0050-04	Hole Plug	2
2	042-0067-06	Groove Pin	2
3	057-0364-00	Arm Shaft	2
4	016-0076-03	D.U. Bushing (Apply Loctite #K906111 to O.D. of Bushing)	6
5		Back Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref
6	015-0721-00	Membrane Switch	2
7	016-0417-00	Split Collar	2
8	030-0849-02	Arm Stop Weldment	1
9	015-0718-00	Nylon Spacer	4
10	015-0712-00	Diode PC Board	1
11	040-0010-46	Screw	4
12	061-0317-00	R.H. Control Decal	1
13	061-0317-01	L.H. Control Decal	1
14	015-0013-00	Cable Tie	1
15	042-0046-01	Groove Pin	2
16		Arm Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref

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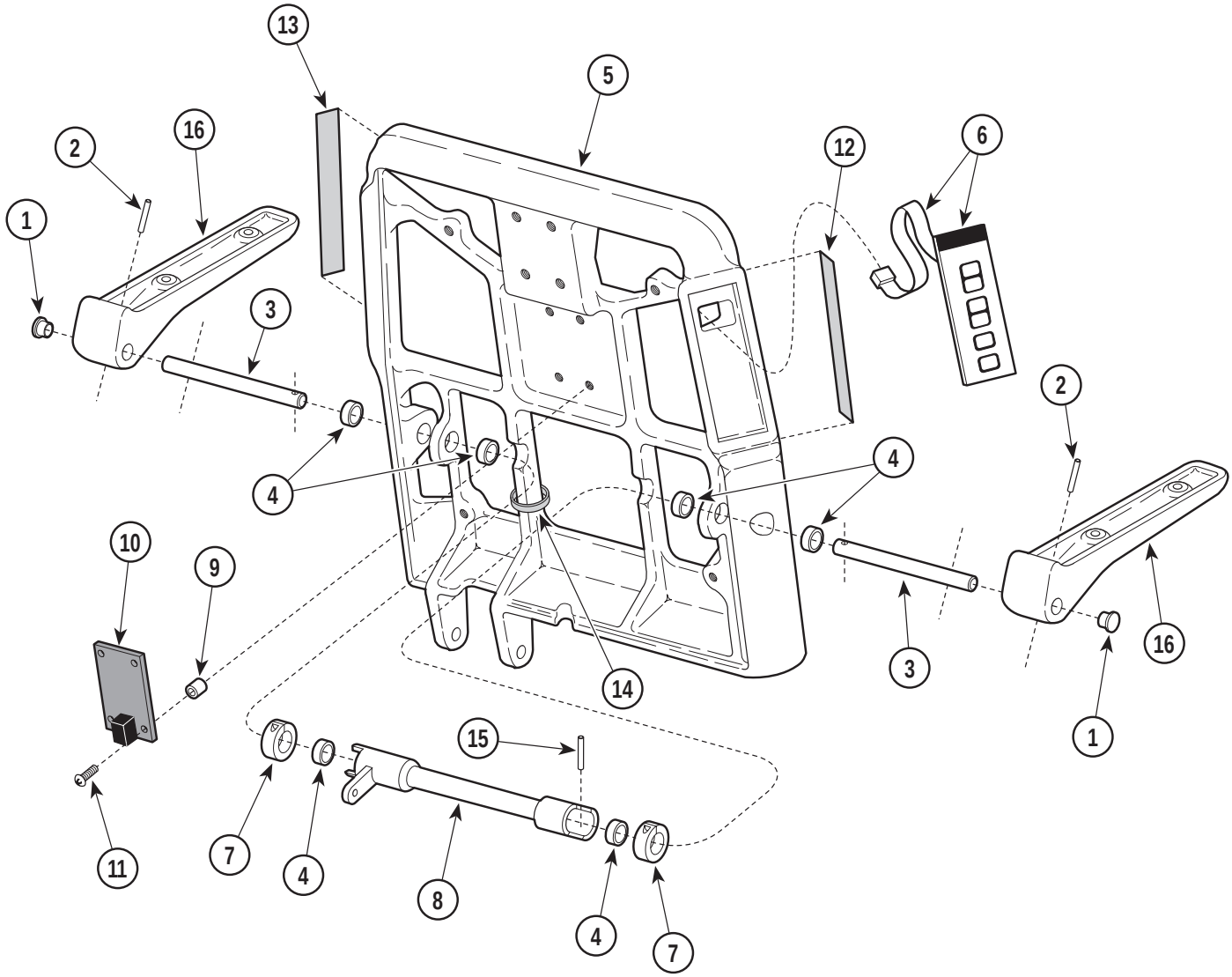
Back Mechanism



MA200401

Used on units with Serial Numbers CT2960 thru CT3629 and DG1389 thru DG1491

Item	Part No.	Description	Qty.
1	053-0050-04	Hole Plug	2
2	042-0067-06	Groove Pin	2
3	057-0364-00	Arm Shaft	2
4	016-0149-08	D.U. Bushing (Apply Loctite #K906111 to O.D. of Bushing)	6
5		Back Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref
6	015-0721-00	Membrane Switch	2
7	016-0417-00	Split Collar	2
8	030-1151-00	Arm Stop Weldment	1
9	015-0718-00	Nylon Spacer	4
10	015-0712-00	Diode PC Board	1
11	040-0010-46	Screw	4
12	061-0317-00	R.H. Control Decal	1
13	061-0317-01	L.H. Control Decal	1
14	015-0013-00	Cable Tie	1
15	042-0046-01	Groove Pin	2
16		Arm Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref

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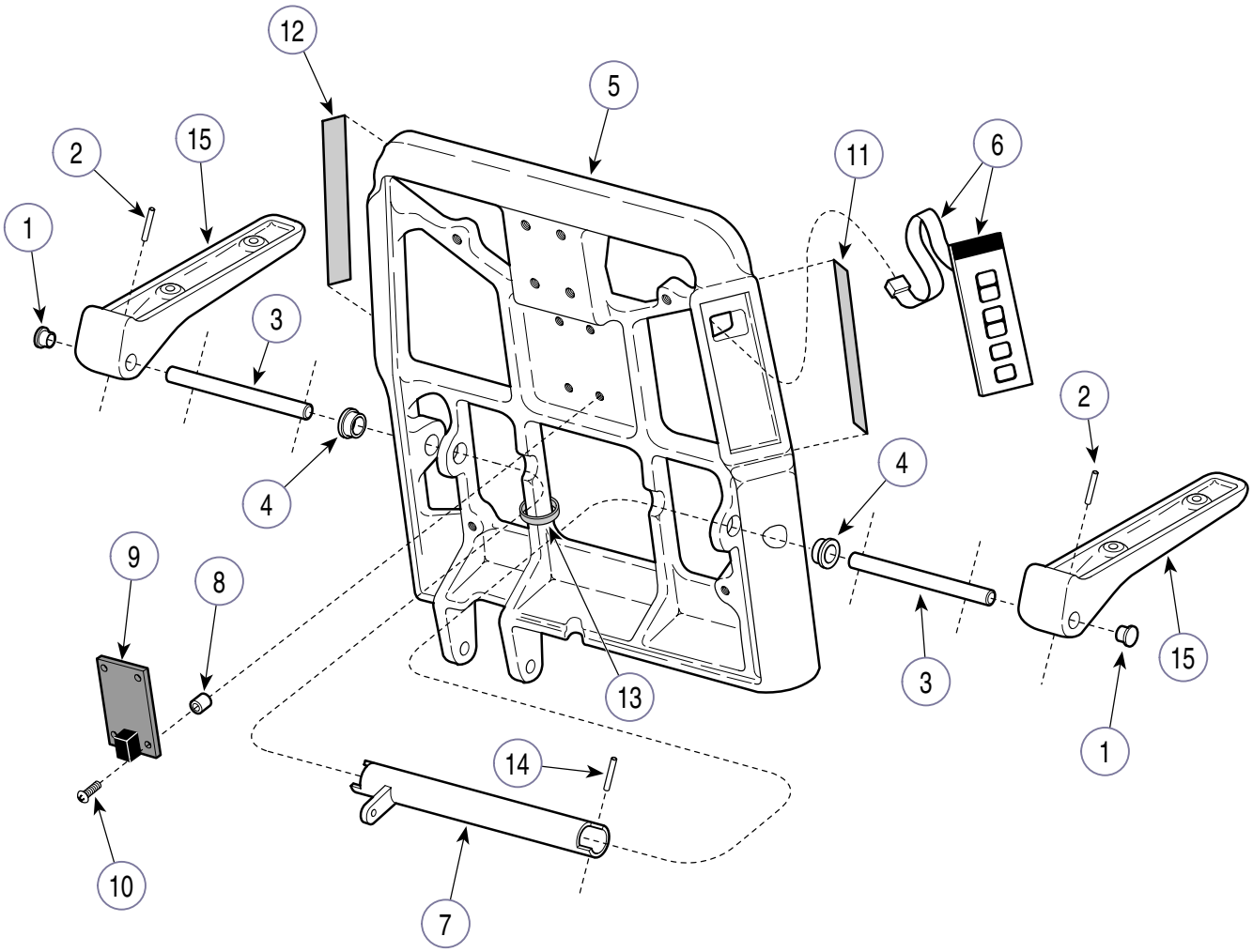
Back Mechanism



MA200402

Used on units with Serial Numbers CT3630 and DG1492 thru Present
Used on units with Serial Numbers V2200 thru Present

Item	Part No.	Description	Qty.
1	053-0050-04	Hole Plug	2
2	042-0067-06	Groove Pin	2
3	057-0722-00	Arm Shaft	2
4	016-0149-08	D.U. Bushing (Apply Loctite #K906111 to O.D. of Bushing)	2
5		Back Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref
6	015-0721-00	Membrane Switch	2
7	030-1351-00	Arm Stop Weldment	1
8	015-0718-00	Nylon Spacer	4
9	015-0712-01	Diode PC Board	1
10	040-0010-46	Screw	4
11	061-0317-00	R.H. Control Decal	1
12	061-0317-01	L.H. Control Decal	1
13	015-0013-00	Cable Tie	1
14	042-0046-01	Groove Pin	2
15		Arm Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref

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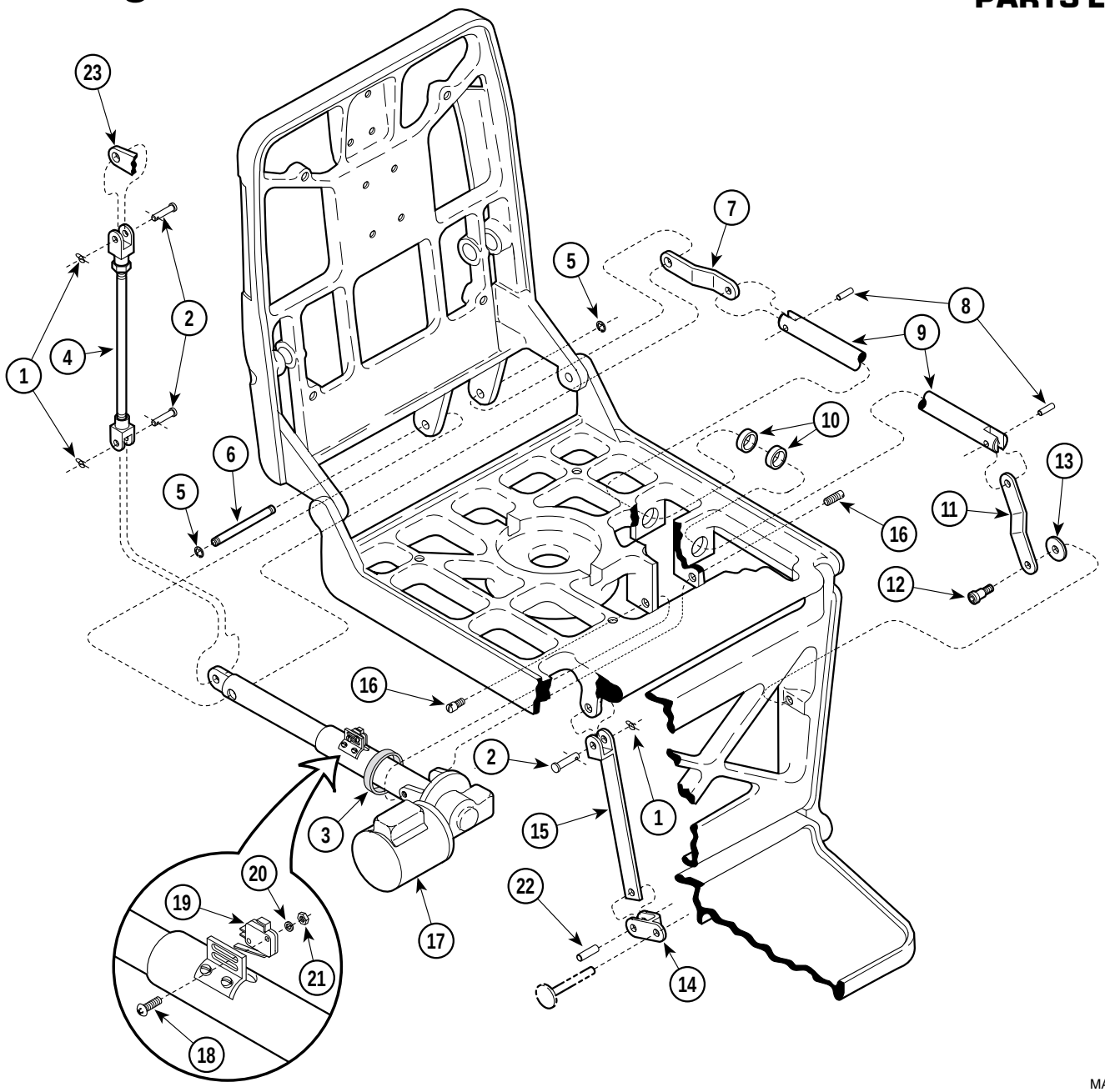
Linkage Mechanism



MA200501

Used on units with Serial Numbers CT1000 thru CT3191 and DG1000 thru DG1432

Item	Part No.	Description	Qty.
1	042-0063-01	Rue Ring Cotter Pin	3
2	042-0602-06	Clevis Pin	3
3	015-0013-00	Cable Tie	1
4	029-1478-02	Linkage Assembly	1
5	042-0007-02	E-Ring	2
6	057-0133-01	Pin	1
7	051-0609-00	Back Push Rod	1
8	042-0043-03	Groove Pin	2
9	057-0253-00	Push Rod	1
10	016-0076-05	D.U. Bushing	2
11	051-0610-00	Leg Push Rod	1
12	042-0014-06	Shoulder Screw	1
13	045-0001-40	Flat Washer	1
14	051-0321-00	Yoke	1
15	030-0344-00	Link Weldment	1
16	057-0139-00	Headless Bolt	2
17		Seat Actuator - Domestic-115 V (Refer to "Seat Actuator Assembly" Elsewhere)	Ref
		Seat Actuator - Export-230 V (Refer to "Seat Actuator Assembly" Elsewhere)	Ref
18	040-0004-09	Screw	2
19	015-0430-00	Limit Switch	1
20	045-0001-38	Washer	2
21	041-0004-01	Nut	2
22	042-0043-02	Groove Pin	1
23		Arm Stop Weldment (Refer to "Back Mechanism" Elsewhere)	Ref

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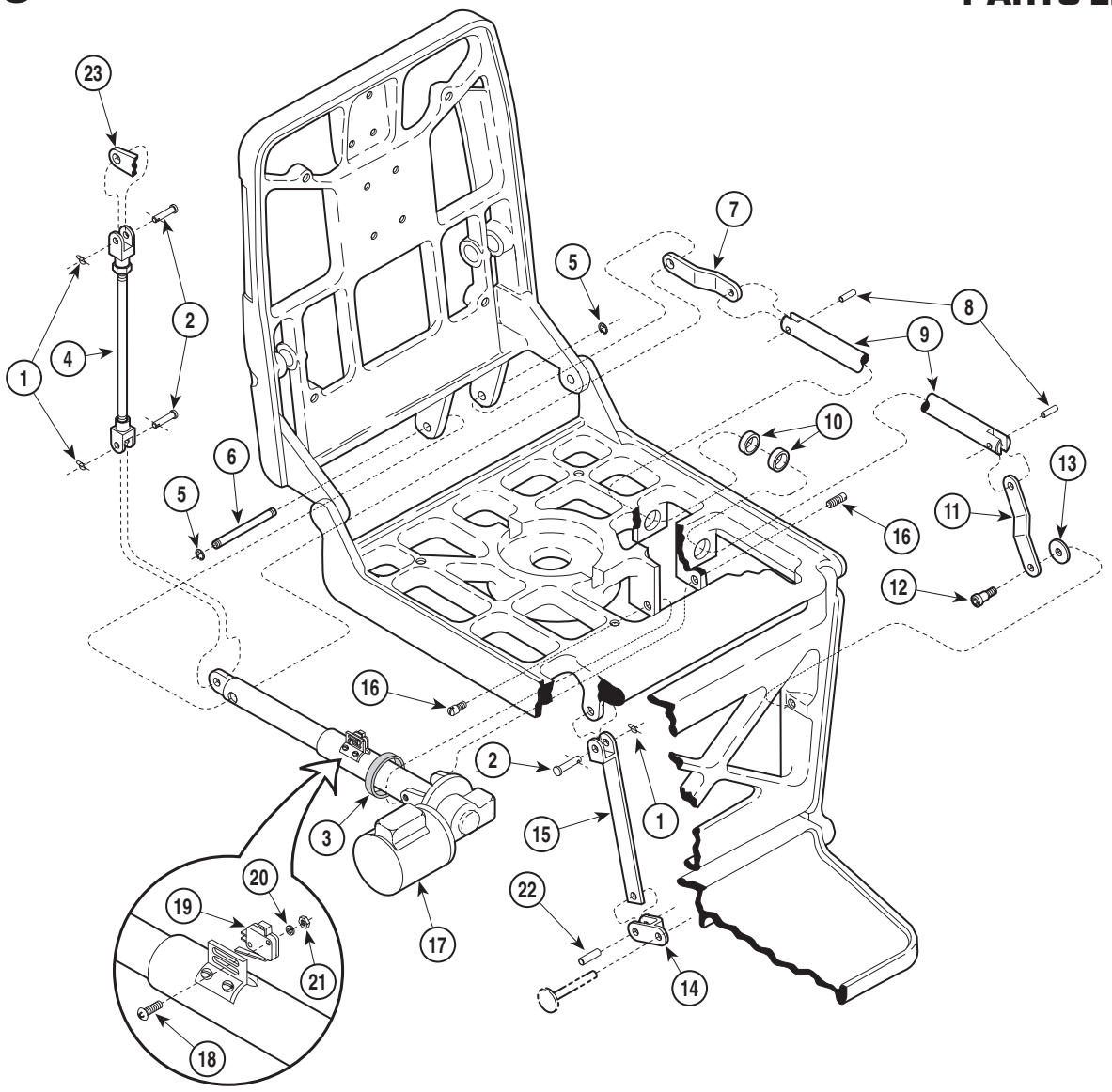
Linkage Mechanism



MA200501

Used on units with Serial Numbers CT3192 and DG1433 thru Present
Used on units with Serial Numbers V2200 thru Present

Item	Part No.	Description	Qty.
1	042-0063-01	Rue Ring Cotter Pin	3
2	042-0602-06	Clevis Pin	3
3	015-0013-00	Cable Tie	1
4	029-1478-02	Linkage Assembly	1
5	042-0007-02	E-Ring	2
6	057-0133-01	Pin	1
7	051-0609-00	Back Push Rod	1
8	042-0043-03	Groove Pin	2
9	057-0253-00	Push Rod	1
10	016-0076-05	D.U. Bushing	2
11	051-0610-00	Leg Push Rod	1
12	042-0014-06	Shoulder Screw	1
13	045-0001-40	Flat Washer	1
14	051-0321-00	Yoke	1
15	030-0344-00	Link Weldment	1
16	057-0139-00	Headless Bolt	2
17		Seat Actuator - Domestic-115 V (Refer to "Seat Actuator Assembly" Elsewhere)	Ref
		Seat Actuator - Export-230 V (Refer to "Seat Actuator Assembly" Elsewhere)	Ref
18	040-0004-09	Screw	2
19	015-0430-00	Limit Switch	1
20	045-0001-38	Washer	2
21	041-0004-01	Nut	2
22	042-0043-02	Groove Pin	1
23		Arm Stop Weldment (Refer to "Back Mechanism" Elsewhere)	Ref

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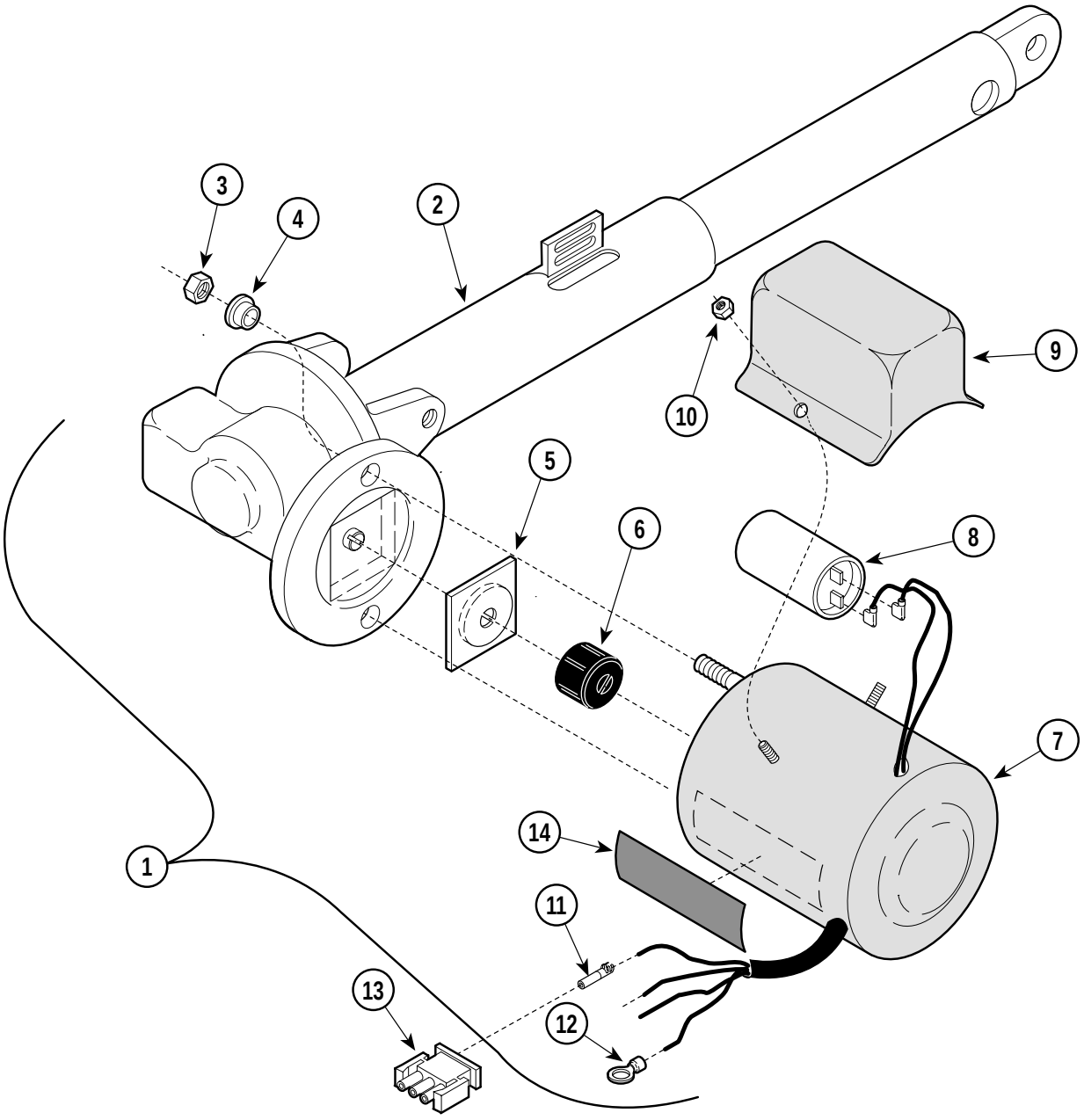
Back Actuator Assembly



MA307700

Used on units with Serial Numbers CT1000 thru CT3191 and DG1000 thru DG1432

Item	Part No.	Description	Qty.
1	002-0507-02	Back Actuator Assembly - 115 V (Includes Items 2 thru 12)	1
	002-0507-03	Back Actuator Assembly - 230 V (Includes Items 2 thru 12)	1
2	• 016-0384-02	• Actuator Mechanism	1
3	•	• Nut	2
4	• 053-0198-00	• Shoulder Washer	2
5	• 016-0237-00	• Actuator Brake	1
6	• 016-0509-00	• Motor Coupler	1
7	• 002-0574-07	• Motor - 115 V	1
	• 002-0574-02	• Motor - 230 V	1
8	• 015-0437-02	• Capacitor (115 V Only [Less Cap])	1
	015-0413-00	• Capacitor Cap (115 V Only)	1
9	•	• Capacitor Cover (115 V Only)	1
10	•	• Nut (115 V Only)	2
11	• 015-0396-01	• Socket Terminal	3
12	• 015-0310-01	• Ring Terminal (115 V Only)	1
13	015-0590-02	Plug	1
14	061-0135-00	Caution Label	1

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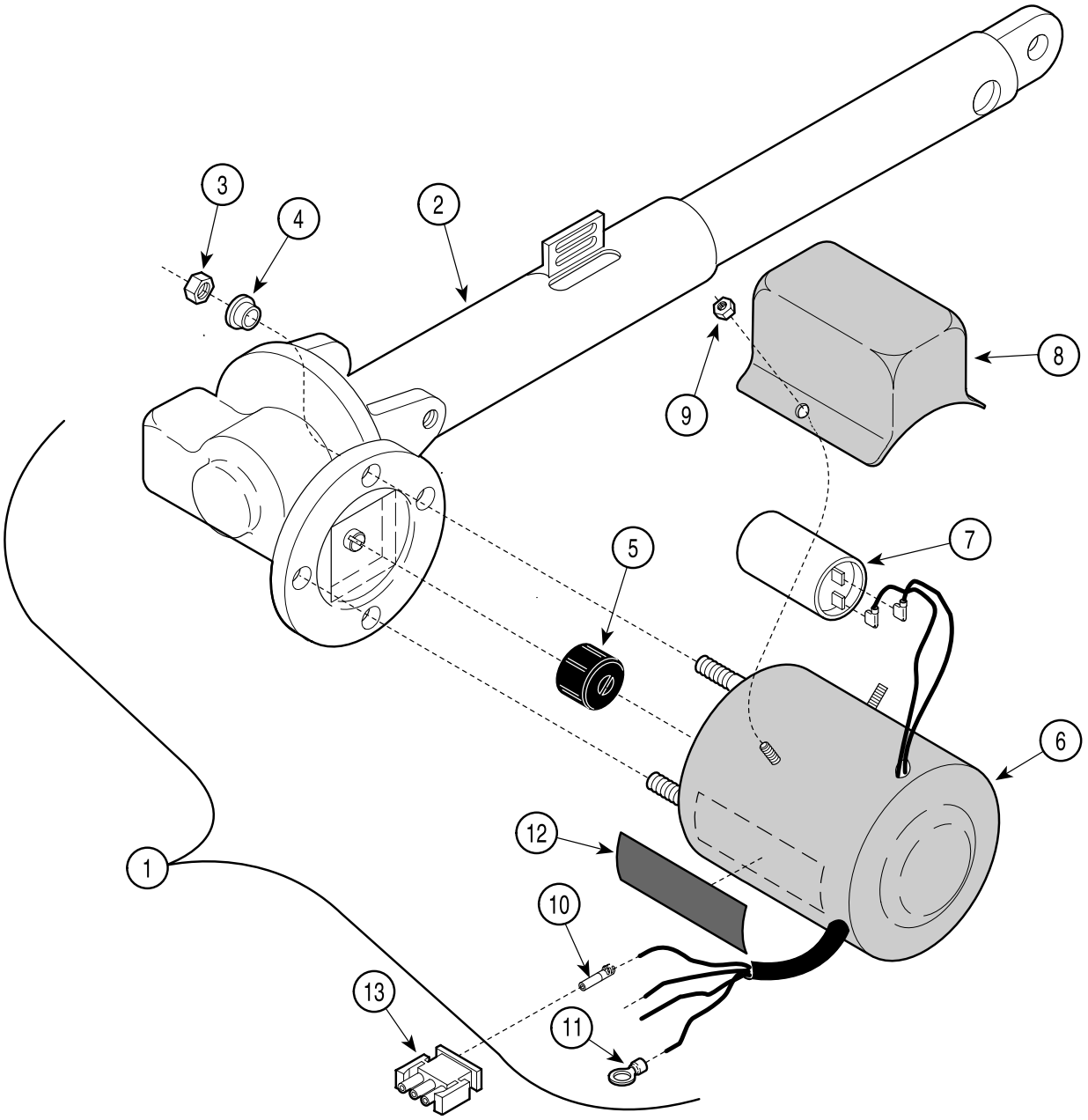
Back Actuator Assembly



MA307701

Used on units with Serial Numbers CT3192 and DG1432 thru Present
Used on units with Serial Numbers V2200 thru Present

Item	Part No.	Description	Qty.
1	002-0507-02	Back Actuator Assembly - 115 V (Includes Items 2 thru 12)	1
	002-0507-03	Back Actuator Assembly - 230 V (Includes Items 2 thru 12)	1
2	•	• Actuator Mechanism	1
3	•	• Nut	2
4	• 053-0198-00	• Shoulder Washer	2
5	• 016-0662-00	• Motor Coupler	1
6	• 015-1085-07	• Motor - 115 V (includes items 7, 8, 9)	1
	• 015-1085-02	• Motor - 230 V	1
7	• • 015-0437-02	• • Capacitor (115 V Only [Less Cap])	1
	• • 015-0413-00	• • Capacitor Cap (115 V Only)	1
8	• •	• • Capacitor Cover (115 V Only)	1
9	• •	• • Nut (115 V Only)	2
10	• 015-0396-01	• Socket Terminal	3
11	• 015-0310-01	• Ring Terminal (115 V Only)	1
12	• 061-0135-00	• Caution Label	1
13	015-0590-02	Plug	1

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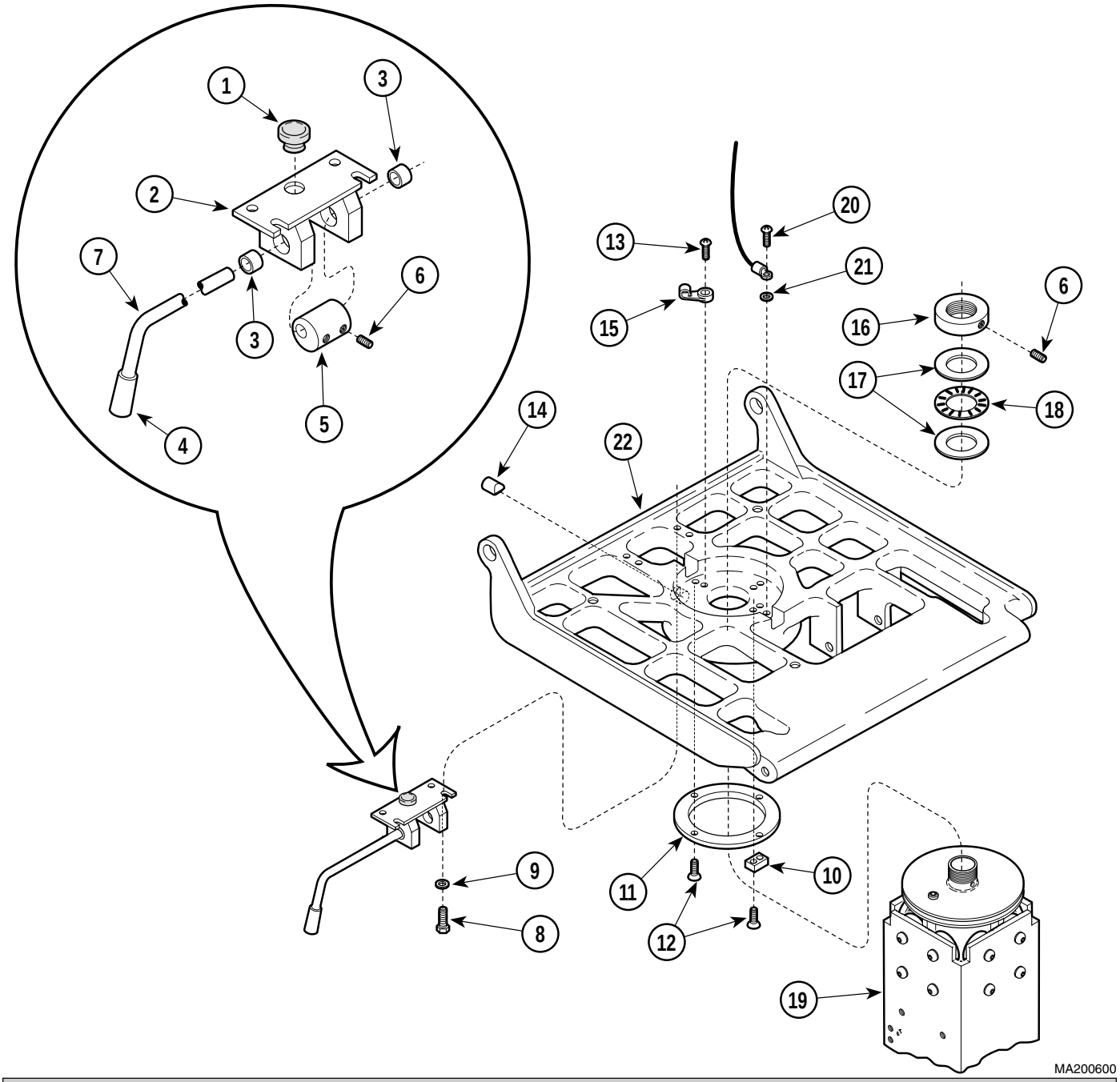
Seat Pivot Mechanism



MA200600

Used on units with Serial Numbers CT1000 thru CT1354 and DG1000 thru DG1099

Item	Part No.	Description	Qty.
1	053-0068-00	Snap Bushing	1
2	030-0345-00	Stop Weldment	1
3	016-0076-04	D.U. Bushing	2
4	016-0123-00	Knob	1
5	057-0244-00	Cam Stop	1
6	040-0250-05	Set Screw	3
7	057-0245-00	Handle	1
8	040-0250-10	Bolt	4
9	045-0001-23	Lockwasher	4
10	002-0721-00	Seat Rotation Stop Kit	1
11	053-0378-00	Bearing	1
12	040-0010-56	Screw	6
13	040-0010-04	Screw	3
14	057-0258-00	Stop	1
15	015-0017-00	Cable Tie	3
16	057-0140-00	Seat Nut	1
17	016-0195-00	Thrust Washer	2
18	016-0196-00	Thrust Bearing	1
19		Elevation Column (Refer to "Elevation Column Assembly" Elsewhere)	Ref
20	040-0010-47	Screw	1
21	045-0001-31	Lockwasher	1
22		Seat Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref

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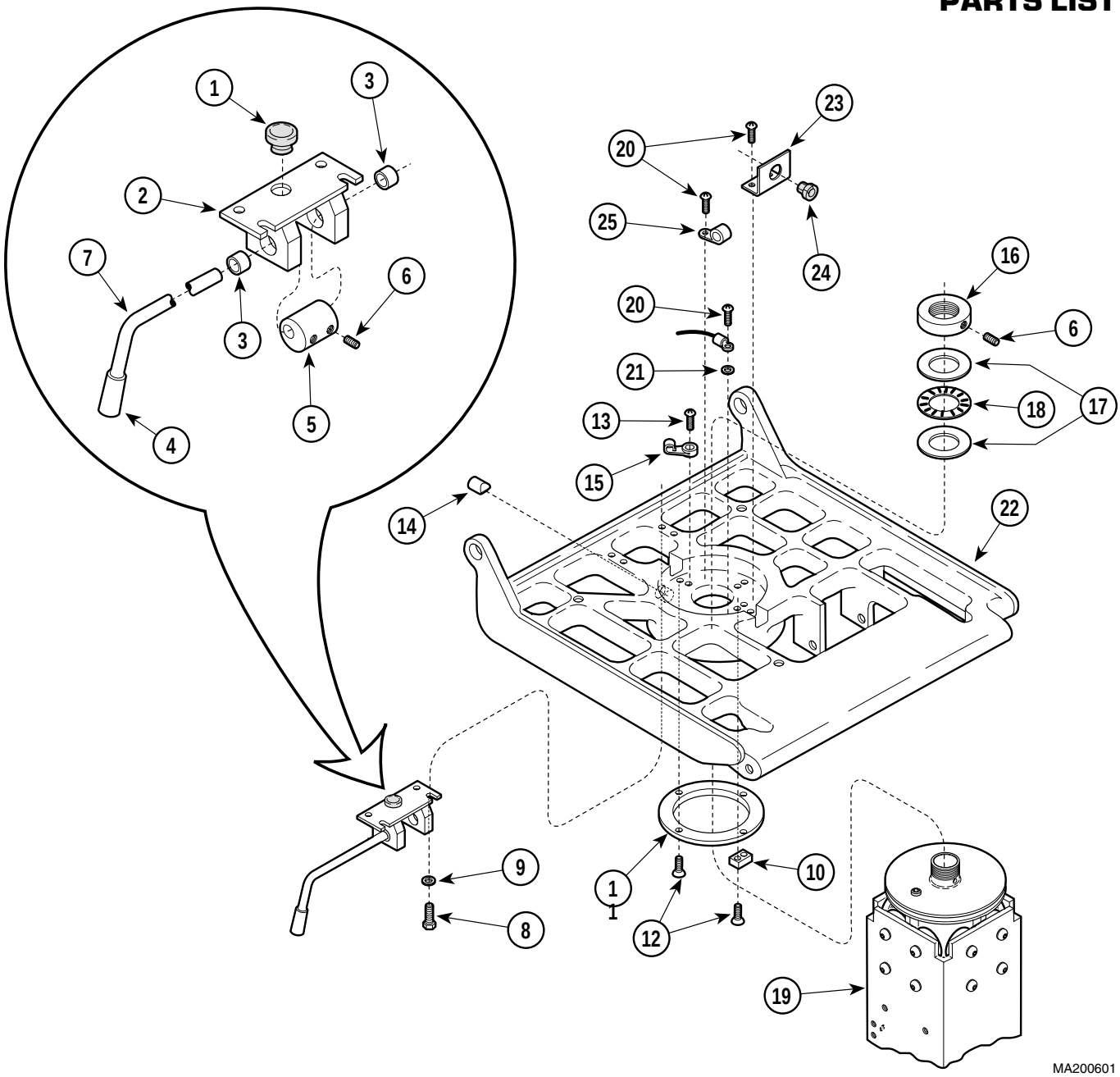
Seat Pivot Mechanism



MA200601

Used on units with Serial Numbers CT1355 & DG1100 thru CT3480 & DG1474

Item	Part No.	Description	Qty.
1	053-0068-00	Snap Bushing	1
2	030-0345-00	Stop Weldment	1
3	016-0076-04	D.U. Bushing	2
4	016-0123-00	Knob	1
5	057-0244-00	Cam Stop	1
6	040-0250-05	Set Screw	3
7	057-0245-00	Handle	1
8	040-0250-10	Bolt	4
9	045-0001-23	Lockwasher	4
10	002-0721-00	Seat Rotation Stop Kit	1
11	053-0378-00	Bearing	1
12	040-0010-56	Screw	6
13	040-0010-04	Screw	3
14	057-0258-00	Stop	1
15	015-0017-00	Cable Tie	2
16	057-0140-00	Seat Nut	1
17	016-0195-00	Thrust Washer	2
18	016-0196-00	Thrust Bearing	1
19		Elevation Column (Refer to "Elevation Column Assembly" Elsewhere)	Ref
20	040-0010-47	Screw	4
21	045-0001-31	Lockwasher	1
22		Seat Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref
23	050-2266-00	Strain Relief Bracket	1
24	015-0002-08	Strain Relief	1
25	015-0014-03	Cable Clamp	1

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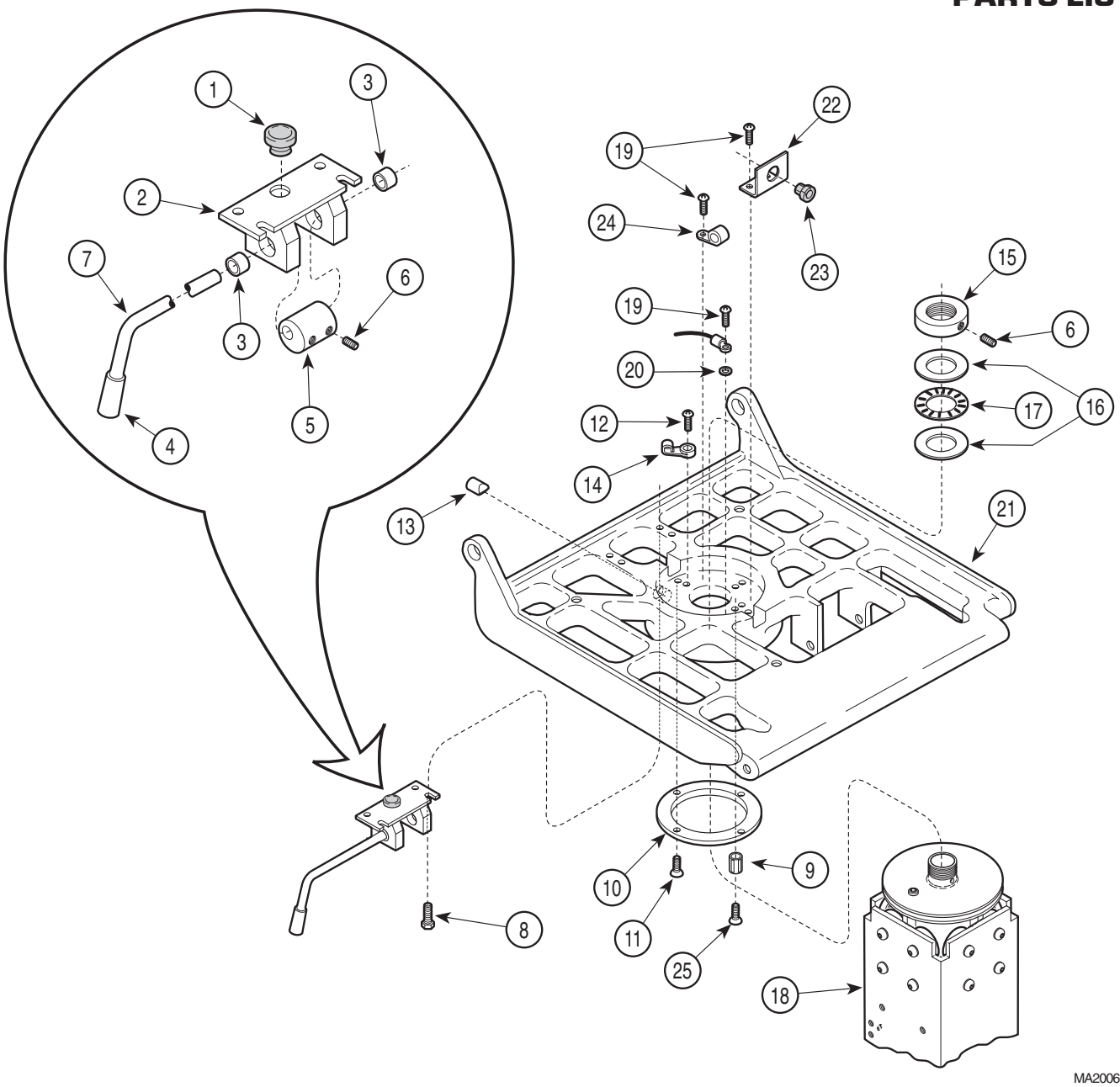
Seat Pivot Mechanism



MA200603

Used on units with Serial Numbers CT3481 and DG1475 thru Present
Used on units with Serial Numbers V2200 thru Present

Item	Part No.	Description	Qty.
1	053-0068-00	Snap Bushing	1
2	030-0345-00	Stop Weldment	1
3	016-0076-04	D.U. Bushing	2
4	016-0123-00	Knob	1
5	057-0244-00	Cam Stop	1
6	040-0250-05	Set Screw	3
7	057-0245-00	Handle	1
8	040-0250-10	Screw	4
9	057-0578-00	Seat Rotation Stop	1
10	053-0378-00	Bearing	1
11	040-0010-56	Screw	4
12	040-0010-04	Screw	3
13	057-0258-00	Stop	1
14	015-0017-00	Cable Tie	2
15	057-0140-00	Seat Nut	1
16	016-0195-00	Thrust Washer	2
17	016-0196-00	Thrust Bearing	1
18		Elevation Column (Refer to "Elevation Column Assembly" Elsewhere)	Ref
19	040-0010-47	Screw	4
20	045-0001-31	Lockwasher	1
21		Seat Casting (Refer to "Chair Frame Assembly" Elsewhere)	Ref
22	050-2266-00	Strain Relief Bracket	1
23	015-0002-08	Strain Relief	1
24	015-0014-03	Cable Clamp	1
25	040-0312-08	Screw	1

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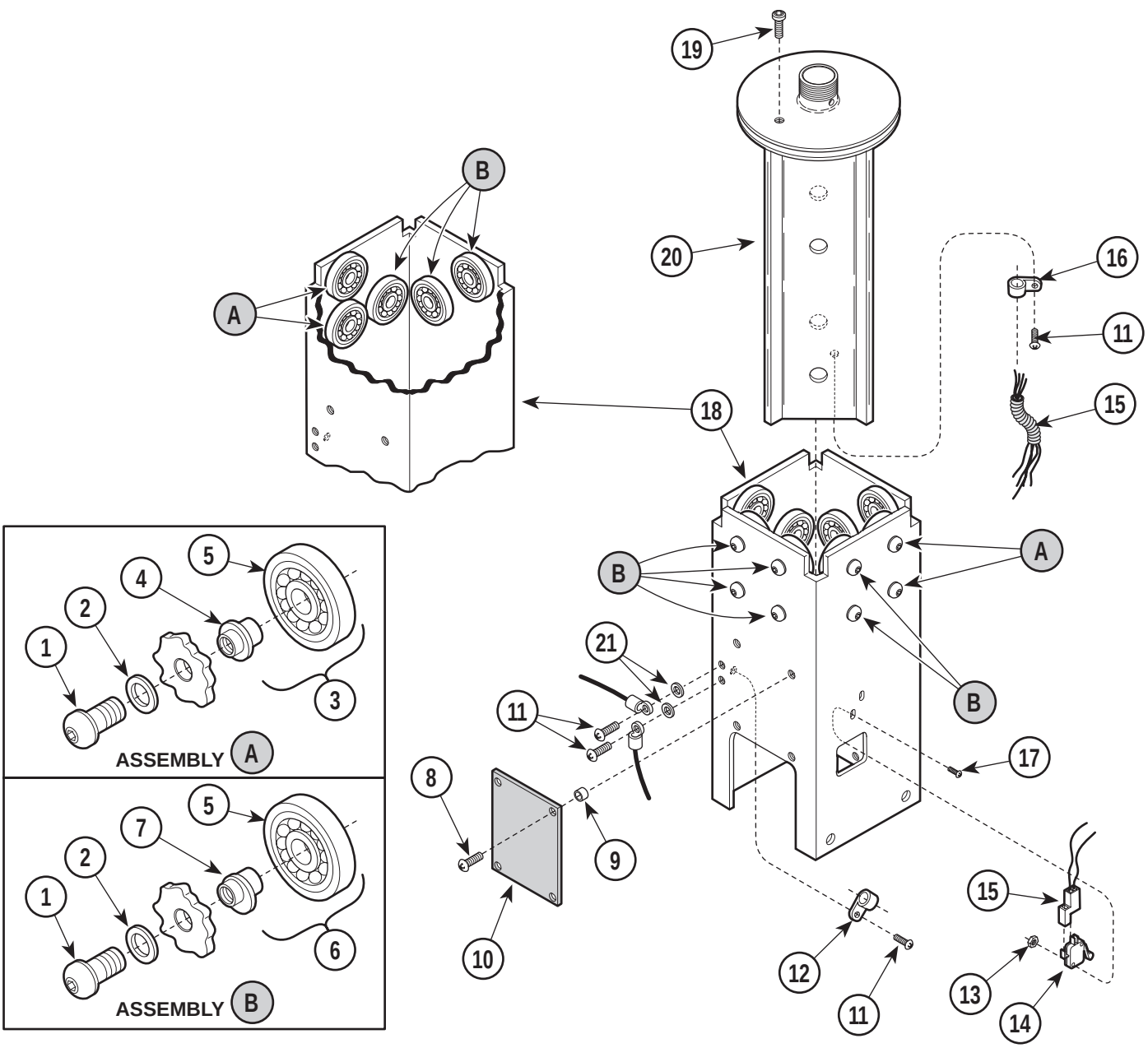
Elevation Column Assembly



MA200100

Used on units with Serial Numbers CT1000 thru CT1148 and DG1000 thru DG1004

Item	Part No.	Description	Qty.
1	040-0312-22	Screw	12
2	045-0001-02	Washer	12
3	029-1246-01	Concentric Tire & Bearing Assy (Includes Items 4 and 5)	4
4	• 557-0022-00	• Concentric Spindle	1
5	• 052-0168-00	• Plated Tire	1
6	029-1246-00	Eccentric Tire & Bearing Assy (Includes Items 5 and 7)	9
7	• 557-0023-00	• Eccentric Spindle	1
8	040-0010-46	Screw	4
9	015-0718-00	Spacer	4
10	002-0347-01	PC Control Board - 115V (Domestic)	1
	015-0696-01	PC Control Board - 230V (Export)	1
11	040-0010-47	Screw	4
12	015-0017-00	Wire Tie	2
13	041-0004-01	Nut	2
14	015-0635-00	Base Limit Switch	1
15	015-0722-00	Wiring Harness	1
16	015-0014-03	Wire Clip	2
17	040-0004-08	Screw	2
18	052-0169-00	Column Tube (Less Tire & Bearing Assy.)	1
19	040-0375-41	Screw	1
20	030-0915-00	Slide Weldment	1
21	045-0001-31	Lockwasher	2

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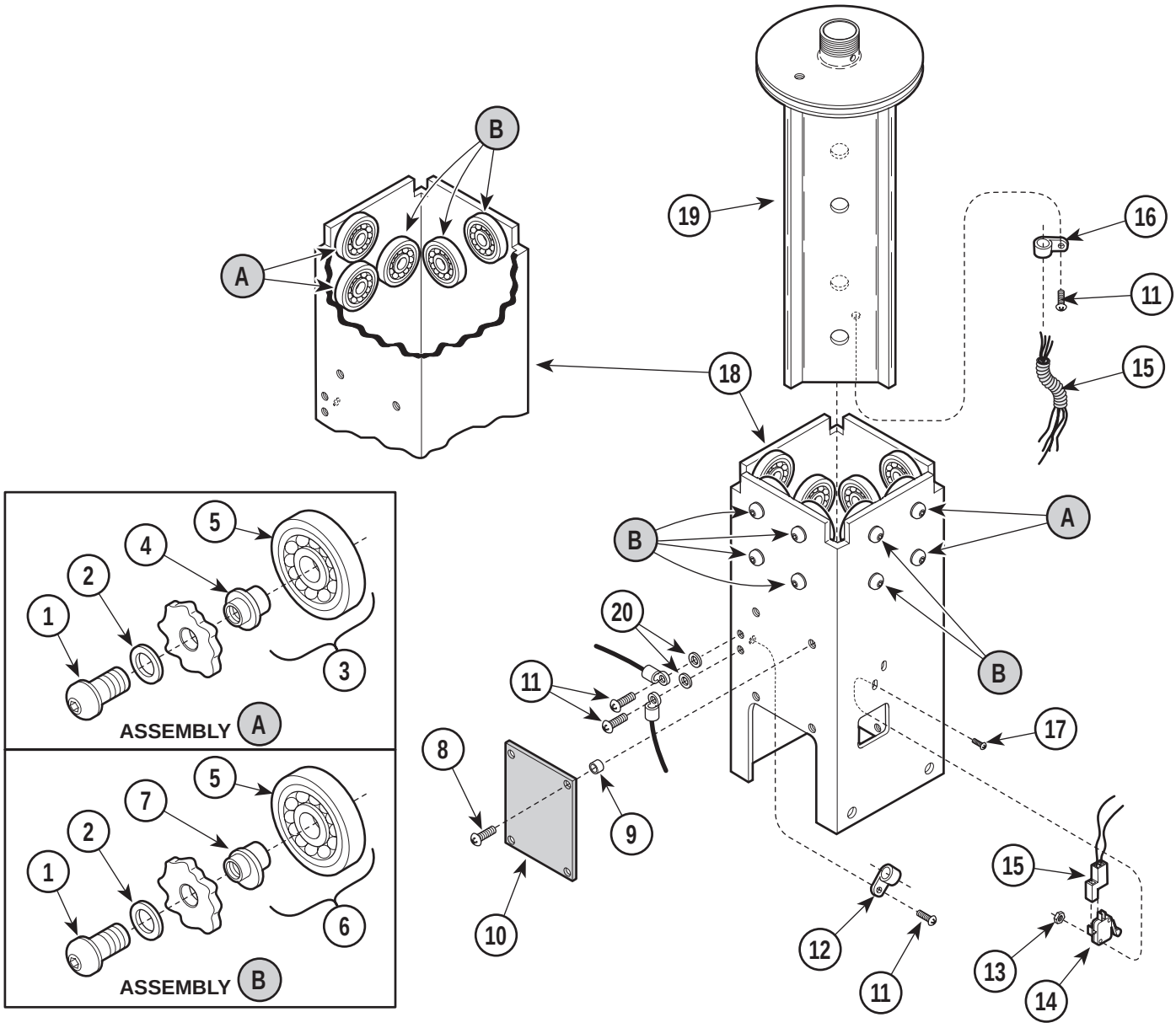
Elevation Column Assembly



MA200101

Used on units with Serial Numbers CT1149 thru CT1354 and DG1004 thru DG1099

Item	Part No.	Description	Qty.
1	040-0312-22	Screw	12
2	045-0001-02	Washer	12
3	029-1246-01	Concentric Tire & Bearing Assy (Includes Items 4 and 5)	4
4	• 557-0022-00	• Concentric Spindle	1
5	• 052-0168-00	• Plated Tire	1
6	029-1246-00	Eccentric Tire & Bearing Assy (Includes Items 5 and 7)	9
7	• 557-0023-00	• Eccentric Spindle	1
8	040-0010-46	Screw	4
9	015-0718-00	Spacer	4
10	002-0347-01	PC Control Board - 115V (Domestic)	1
	015-0696-01	PC Control Board - 230V (Export)	1
11	040-0010-47	Screw	4
12	015-0017-00	Wire Tie	2
13	041-0004-01	Nut	2
14	015-0635-00	Base Limit Switch	1
15	015-0722-00	Wiring Harness	1
16	015-0014-03	Wire Clip	2
17	040-0004-08	Screw	2
18	052-0169-00	Column Tube (Less Tire & Bearing Assy.)	1
19	030-0915-00	Slide Weldment	1
20	045-0001-31	Lockwasher	2

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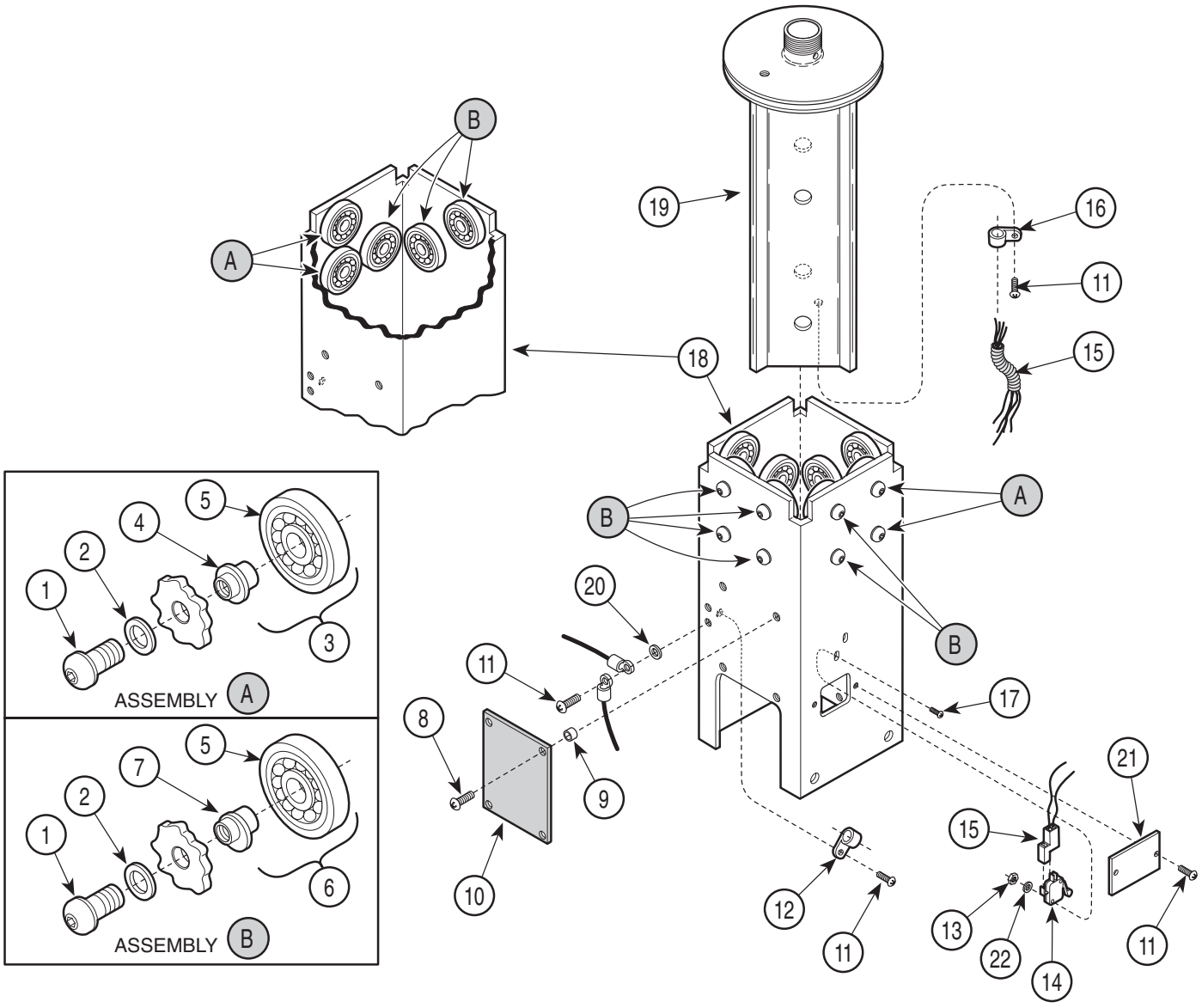
Elevation Column Assembly



MA200102

Used on units with Serial Numbers CT1355 and DG1100 thru Present
Used on units with Serial Numbers V2200 thru Present

Item	Part No.	Description	Qty.
1	040-0312-22	Screw	12
2	045-0001-02	Washer	12
3	029-1246-01	Concentric Tire & Bearing Assy (Includes Items 4 and 5)	4
4	• 557-0022-00	• Concentric Spindle	1
5	• 052-0168-00	• Plated Tire	1
6	029-1246-00	Eccentric Tire & Bearing Assy (Includes Items 5 and 7)	9
7	• 557-0023-00	• Eccentric Spindle	1
8	040-0010-46	Screw	4
9	015-0718-00	Spacer	4
10	002-0347-01	PC Control Board - 115V (Domestic)	1
	015-0696-01	PC Control Board - 230V (Export)	1
11	040-0010-47	Screw	5
12	015-0071-00	Wire Tie	2
13	041-0004-01	Nut	2
14	015-0635-00	Base Limit Switch	1
15		Wiring Harness (Refer to "Wiring Diagram" [Section 5] Elsewhere)	Ref
16	015-0014-03	Wire Clip	3
17	040-0004-08	Screw	2
18	052-0207-00	Column Tube (Less Tire & Bearing Assy.)	1
19	030-0770-00	Slide Weldment	1
20	045-0001-31	Lockwasher	1
21	050-2390-10	Switch Cover	1
22	045-0001-38	Lockwasher	2

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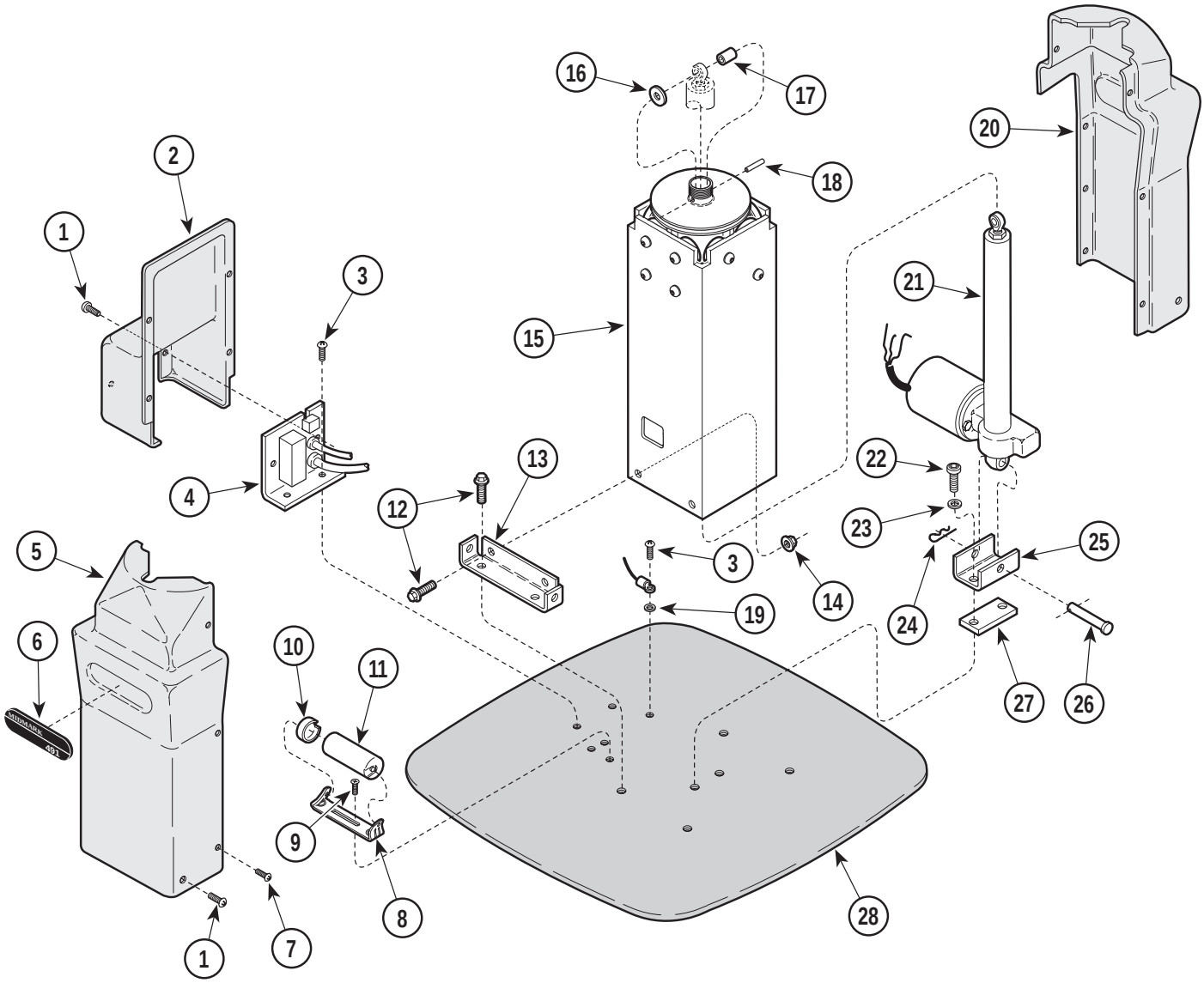
Base Assembly



MA200700

Used on units with Serial Numbers CT1000 thru CT1354 and DG1000 thru DG1099

Item	Part No.	Description	Qty.
1	040-0010-04	Screw	6
2	002-0335-00	Motor Cover	1
3	040-0010-47	Screw	3
4		Receptacle Panel (Refer to "Receptacle Panel Assembly - Domestic" or "Receptacle Panel Assembly - Export Elsewhere)	Ref
5	002-0334-01	R.H. Shroud	1
6	053-0297-91	Nameplate	2
7	040-0008-29	Screw	4
8	015-0412-00	Capacitor Clip (Domestic Units Only)	1
9	040-0010-52	Screw (Domestic Units Only)	2
10	015-0413-00	Capacitor Cap (Domestic Units Only)	1
11	015-0437-02	Capacitor (Domestic Units Only)	1
12	040-0375-00	Screw	8
13	050-1880-00	Base Mount Angle	1
14	041-0375-12	Nut	4
15		Elevation Column (Refer to "Elevation Column Assembly" Elsewhere)	Ref
16	053-0021-00	Rubber Washer	1
17	052-0185-00	Spacer	1
18	057-0295-00	Pin	1
19	045-0001-31	Lockwasher	1
20	002-0334-00	L.H. Shroud	1
21		Base Actuator (Refer to "Base Actuator Assembly" Elsewhere)	Ref
22	042-0014-14	Shoulder Bolt	2
23	045-0001-49	Washer	2
24	042-0004-00	Hitch Pin Clip	1
25	050-2010-00	Actuator Mount	1
26	042-0005-05	Clevis Pin	1
27	053-0293-00	Isolator Pad	1
28	020-0082-00	Base	1

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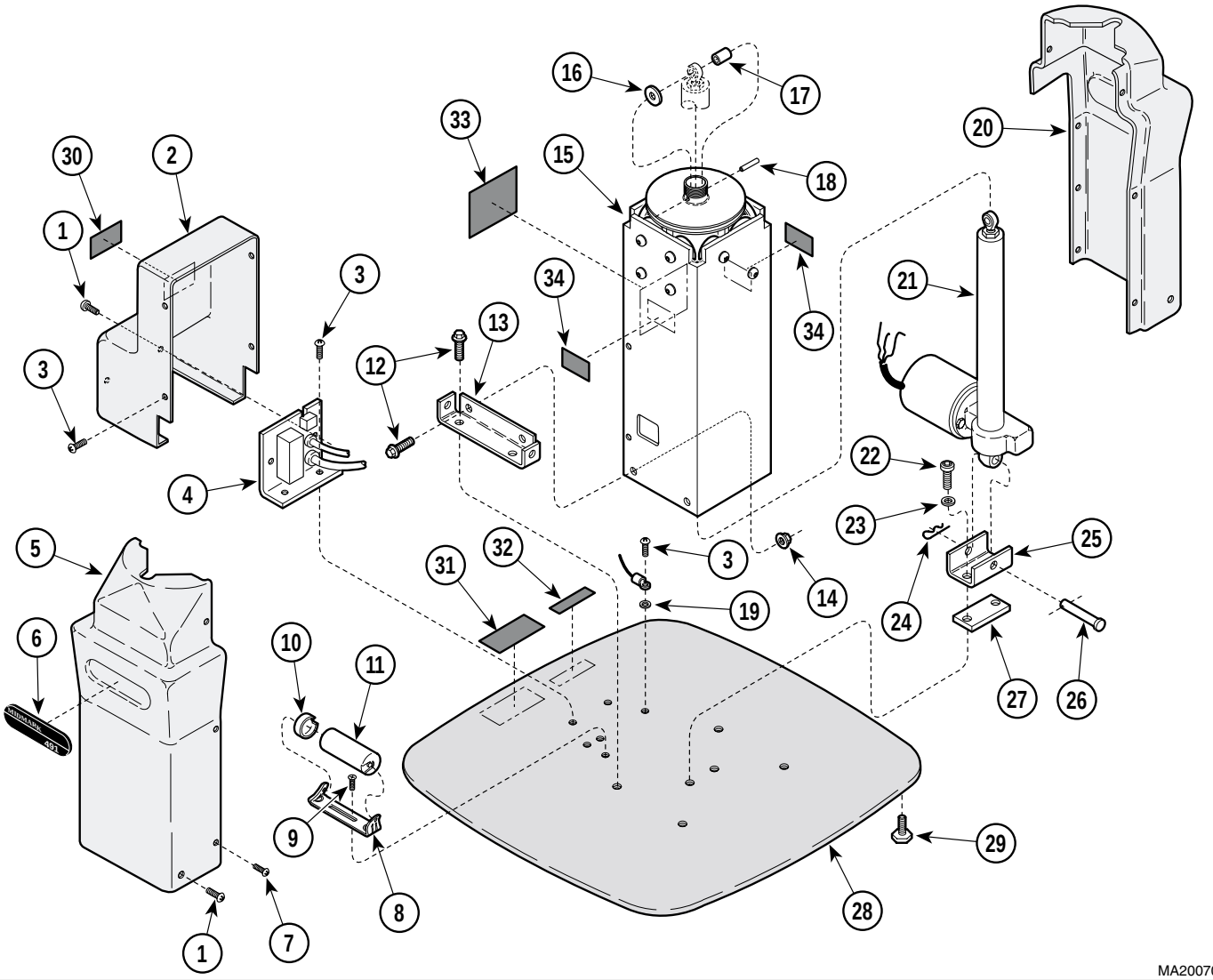
Base Assembly



MA200701

Used on units with Serial Numbers CT1355 thru CT3187 and DG1100 thru DG1432

Item	Part No.	Description	Qty.
1	040-0010-04	Screw	6
2	050-2355-00	Motor Cover	1
3	040-0010-47	Screw	7
4		Receptacle Panel (Refer to "Receptacle Panel Assembly - Domestic" or "Receptacle Panel Assembly - Export Elsewhere)	Ref
5	053-0510-00	R.H. Shroud (Less Nutserts)	1
	042-0045-02	Nutserts	1
6	053-0297-91	Nameplate	2
7	040-0008-29	Screw	4
8	015-0412-00	Capacitor Clip (Domestic Units Only)	1
9	040-0010-52	Screw (Domestic Units Only)	2
10	015-0413-00	Capacitor Cap (Domestic Units Only)	1
11	015-0437-02	Capacitor (Domestic Units Only)	1
12	040-0375-00	Screw	8
13	050-1880-00	Base Mount Angle	1
14	041-0375-12	Nut	4
15		Elevation Column (Refer to "Elevation Column Assembly" Elsewhere)	Ref
16	053-0021-00	Rubber Washer	1
17	052-0185-00	Spacer	1
18	057-0295-00	Pin	1
19	045-0001-31	Lockwasher	1
20	053-0510-01	L.H. Shroud (Less Nutserts)	1
	042-0045-02	Nutserts	3
21		Base Actuator (Refer to "Base Actuator Assembly" Elsewhere)	Ref
22	042-0014-14	Shoulder Bolt	2
23	045-0001-49	Washer	2
24	042-0004-00	Hitch Pin Clip	1
25	050-2010-00	Actuator Mount	1
26	042-0005-05	Clevis Pin	1
27	053-0293-00	Isolator Pad	1
28	050-2517-00	Base	1
29	016-0001-01	Leveling Screw	4
30	061-0293-00	Caution Label	1
31	061-0470-00	Receptacle Rating Label	1
32	061-0295-00	Cord Label	1
33	061-0233-00	Fuse Label	1
34	061-0033-00	Caution Label	2

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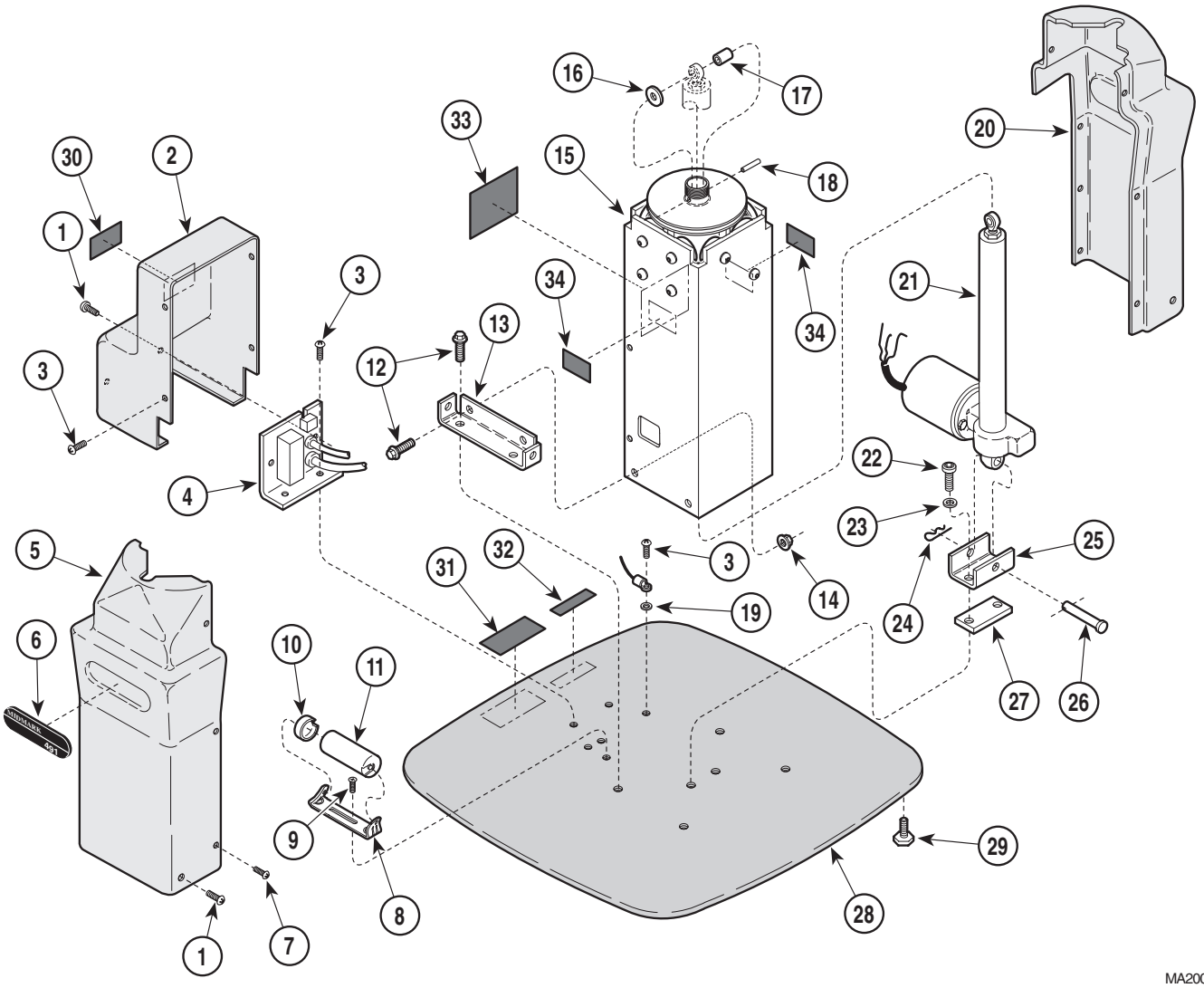
Base Assembly



MA200701

Used on units with Serial Numbers CT3188 and DG1433 thru Present
Used on units with Serial Numbers V2200 thru Present

Item	Part No.	Description	Qty.
1	040-0010-04	Screw	6
2	050-2355-00	Motor Cover	1
3	040-0010-47	Screw	7
4		Receptacle Panel (Refer to "Receptacle Panel Assembly - Domestic" or "Receptacle Panel Assembly - Export Elsewhere)	Ref
5	053-0510-00	R.H. Shroud (Less Nutserts)	1
	042-0045-02	Nutserts	1
6	053-0297-91	Nameplate	2
7	040-0008-29	Screw	4
8	015-0412-00	Capacitor Clip (Domestic Units Only)	1
9	040-0010-52	Screw (Domestic Units Only)	2
10	015-0413-00	Capacitor Cap (Domestic Units Only)	1
11	015-0437-02	Capacitor (Domestic Units Only)	1
12	040-0375-00	Screw	8
13	050-1880-00	Base Mount Angle	1
14	041-0375-12	Nut	4
15		Elevation Column (Refer to "Elevation Column Assembly" Elsewhere)	Ref
16	053-0021-00	Rubber Washer	1
17	052-0185-00	Spacer	1
18	057-0295-00	Pin	1
19	045-0001-31	Lockwasher	1
20	053-0510-01	L.H. Shroud (Less Nutserts)	1
	042-0045-02	Nutserts	3
21		Base Actuator (Refer to "Base Actuator Assembly" Elsewhere)	Ref
22	042-0014-14	Shoulder Bolt	2
23	045-0001-49	Washer	2
24	042-0004-00	Hitch Pin Clip	1
25	050-2010-00	Actuator Mount	1
26	042-0005-05	Clevis Pin	1
27	053-0293-00	Isolator Pad	1
28	050-2517-00	Base	1
29	016-0001-01	Leveling Screw	4
30	061-0293-00	Caution Label	1
31	061-0470-00	Receptacle Rating Label	1
32	061-0295-00	Cord Label	1
33	061-0233-00	Fuse Label	1
34	061-0033-00	Caution Label	2

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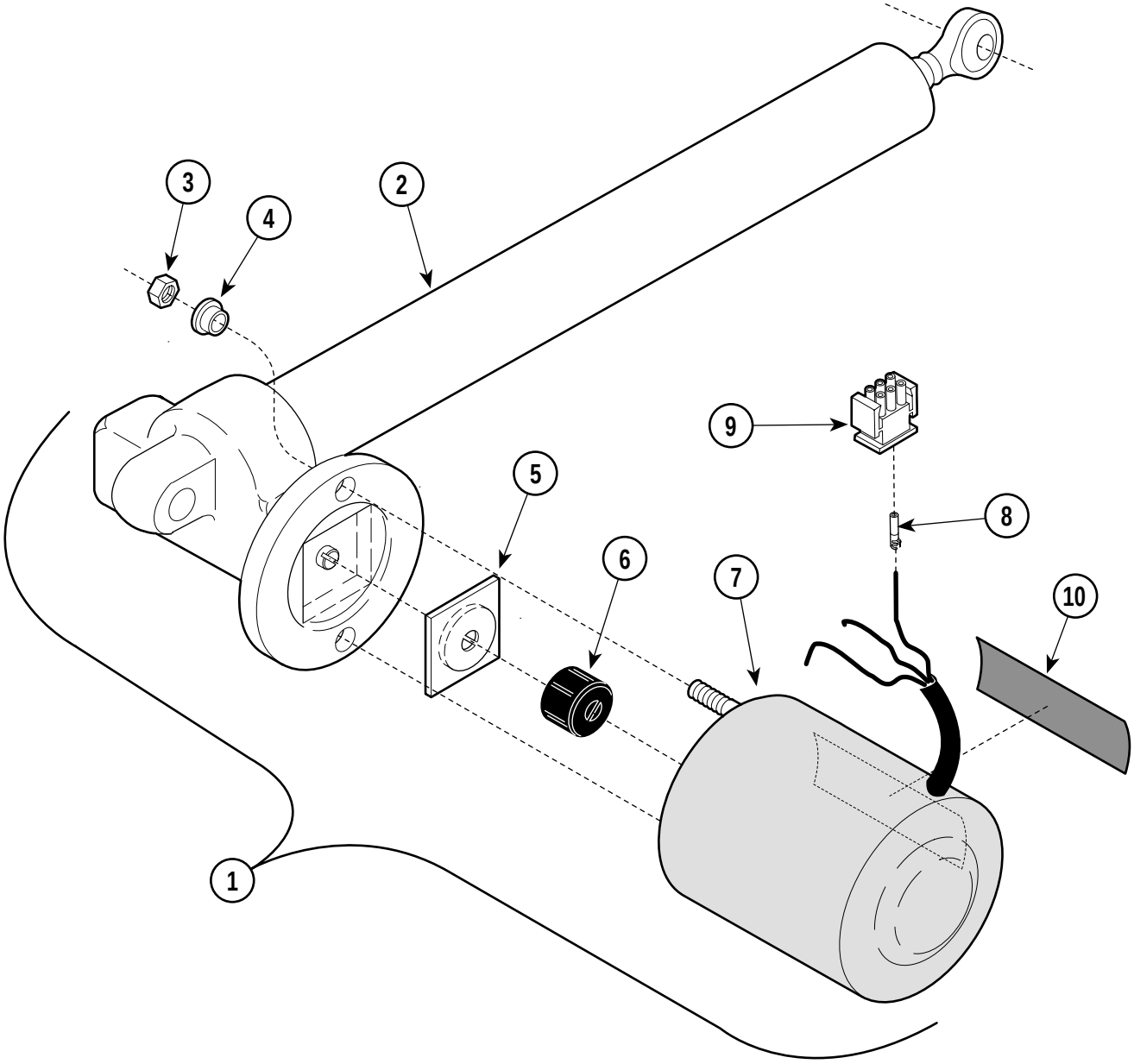
Base Actuator Assembly



MA307800

Used on units with Serial Numbers CT1000 thru CT3187 and DG1000 thru DG1432

Item	Part No.	Description	Qty.
1	002-0507-00	Base Actuator Assembly - 115 V (Includes Items 2 thru 8)	1
	002-0507-01	Base Actuator Assembly - 230 V (Includes Items 2 thru 8)	1
2	• 016-0443-02	• Actuator Mechanism	1
3	•	• Nut	2
4	• 053-0198-00	• Shoulder Washer	2
5	• 016-0237-00	• Actuator Brake	1
6	• 016-0509-00	• Motor Coupler	1
7	• 002-0574-00	• Motor - 115 V	1
	• 002-0574-02	• Motor - 230 V	1
8	• 015-0395-04	• Socket Terminal	3
9	015-0391-00	Plug	1
10	061-0135-00	Caution Label	1

Always Specify Model & Serial Number

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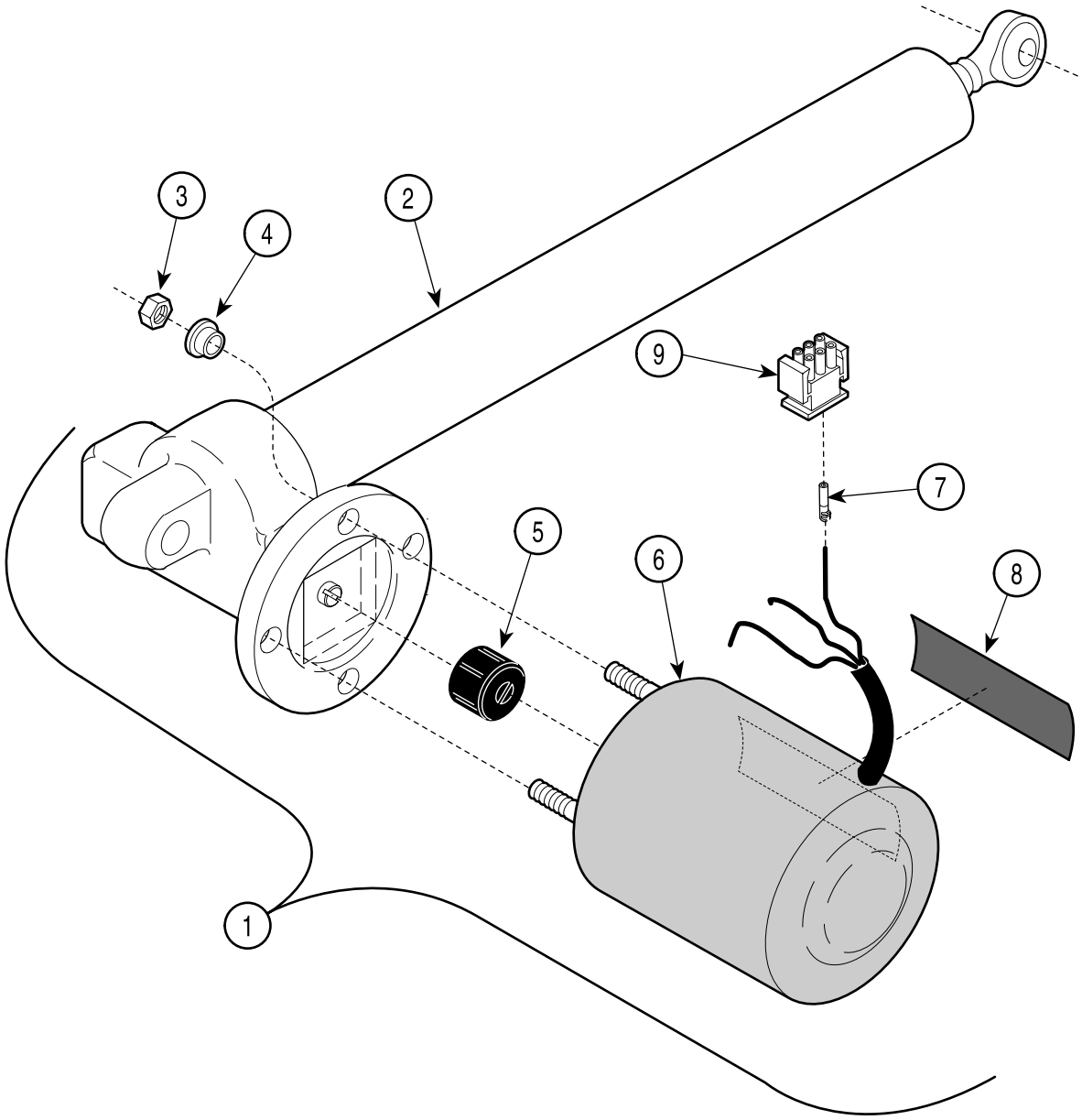
Base Actuator Assembly



MA307801

Used on units with Serial Numbers CT3188 and DG1433 thru Present
Used on units with Serial Numbers V2200 thru Present

Item	Part No.	Description	Qty.
1	002-0507-00	Base Actuator Assembly - 115 V (Includes Items 2 thru 8)	1
	002-0507-01	Base Actuator Assembly - 230 V (Includes Items 2 thru 8)	1
2	•	• Actuator Mechanism	1
3	•	• Nut	2
4	• 053-0198-00	• Shoulder Washer	2
5	• 016-0662-00	• Motor Coupler	1
6	• 015-1085-00	• Motor - 115 V	1
	• 015-1085-02	• Motor - 230 V	1
7	• 015-0396-04	• Socket Terminal	3
8	• 061-0135-00	• Caution Label	1
9	015-0391-00	Plug	1

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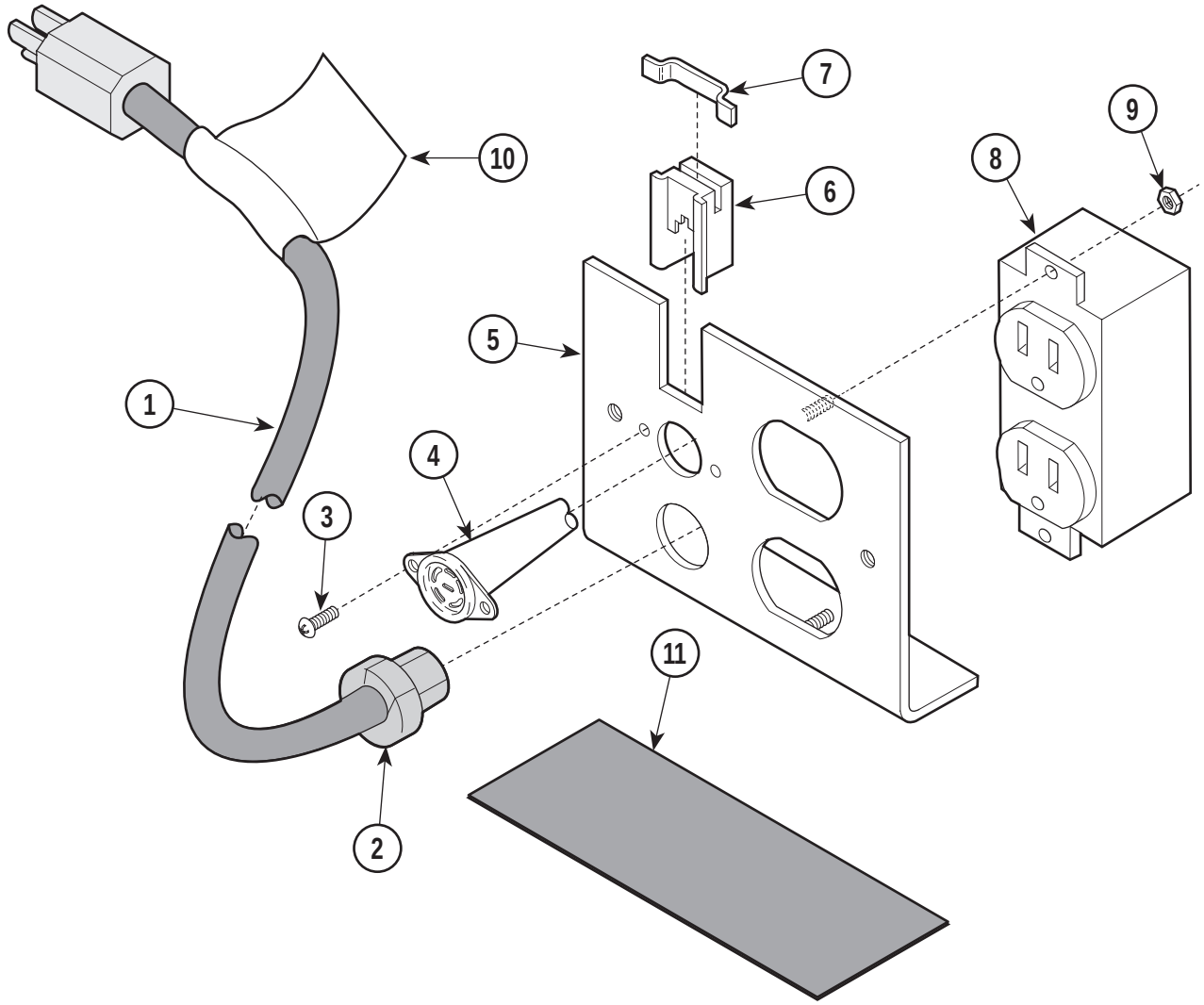
Receptacle Panel Assembly (Domestic)



MA200800

Used on units with Serial Numbers CT1000 thru CT1354 and DG1000 thru DG1099

Item	Part No.	Description	Qty.
1	015-0066-06	Cord Assembly	1
2	015-0002-01	Strain Relief Bushing	1
3	040-0006-06	Screw	2
4	015-0699-00	Footswitch Wiring Harness	1
5	030-0748-10	Receptacle Weldment	1
6	015-0524-00	Jack Handset Harness	1
7	050-1544-00	Clip Spring Retainer	1
8	015-0083-01	Duplex Receptacle	1
9	041-0008-00	Nut	2
10	061-0034-00	Cord Tag	1
11	061-0325-00	Receptacle Ratings Label	1

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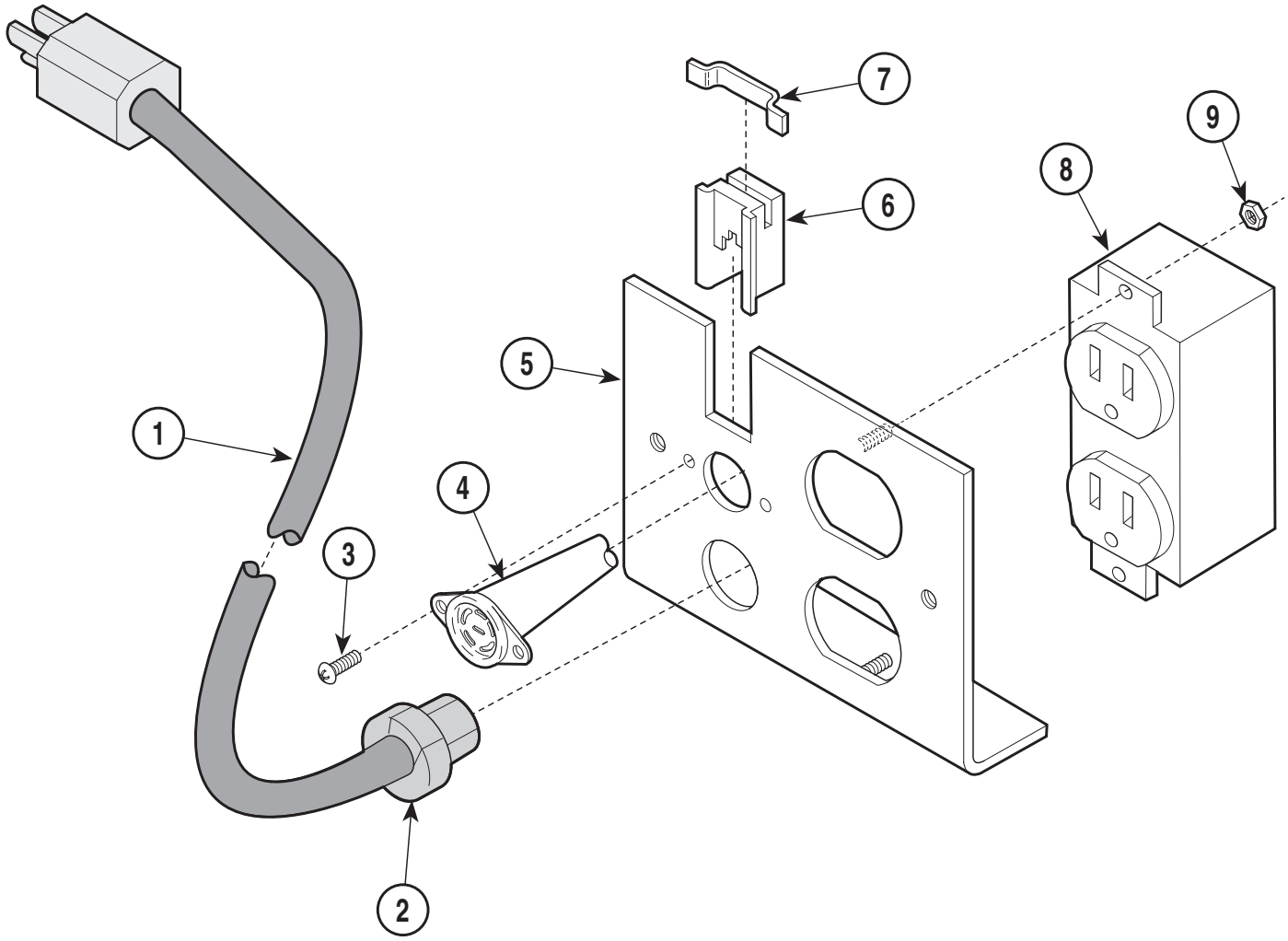
Receptacle Panel Assembly (Domestic)



MA200801

Used on units with Serial Numbers CT1355 and DG1100 thru Present
Used on units with Serial Numbers V2200 thru Present

Item	Part No.	Description	Qty.
1	015-0066-06	Cord Assembly	1
2	015-0002-08	Strain Relief Bushing	1
3	040-0006-06	Screw	2
4	015-0699-00	Footswitch Wiring Harness	1
5	030-1012-10	Receptacle Weldment	1
6	015-0524-00	Jack Handset Harness	1
7	050-1544-00	Clip Spring Retainer	1
8	015-0083-01	Duplex Receptacle	1
9	041-0006-02	Nut	2

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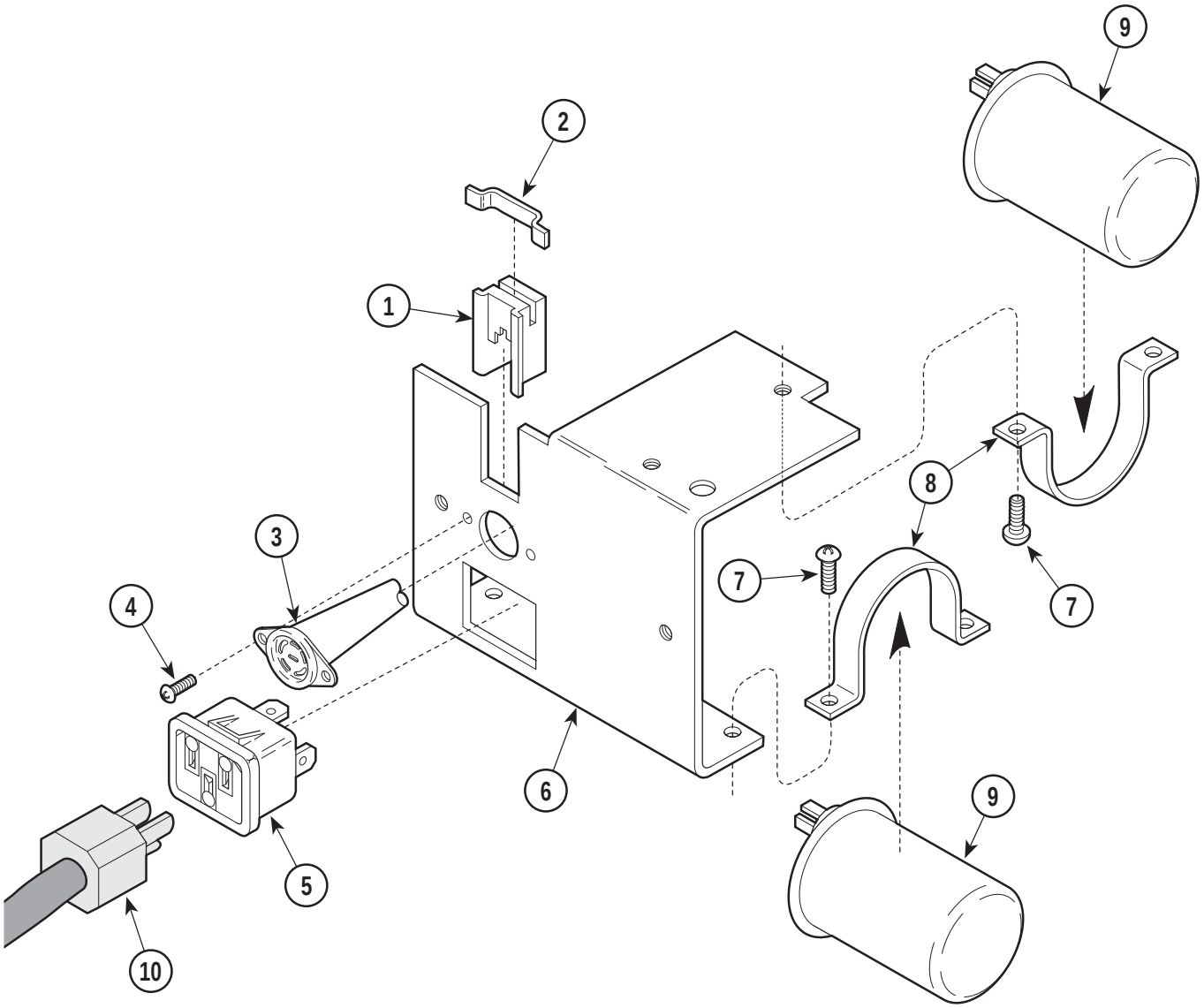
Receptacle Panel Assembly (Export)



MA200900

Item	Part No.	Description	Qty.
1	015-0524-00	Jack Handset Harness	1
2	050-1544-00	Clip Spring Retainer	1
3	015-0699-00	Footswitch Wiring Harness	1
4	040-0006-06	Screw	2
5	015-0639-00	AC Connector Receptacle	1
6	050-2058-10	Inlet Bracket	1
7	040-0010-47	Screw	5
8	015-0461-00	Capacitor Clamp	2
9	015-0438-03	Capacitor	2
10	015-0363-00	Cord Set - Belgium / Europe	1
	015-0363-01	Cord Set - Italian	1
	015-0363-02	Cord Set - Swiss	1
	015-0363-03	Cord Set - United Kingdom	1
	015-0363-04	Cord Set - Australian	1
	015-0363-05	Cord Set - Israeli	1

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FAX ORDERING FORM

(SERVICE PARTS ONLY)

NOTES:

- **ALL BLOCKED AREAS MUST BE COMPLETED.**
- **USE FOR NON-WARRANTY FAX ORDERS ONLY. WARRANTY ORDERS MUST BE TELEPHONED IN (1-800-MIDMARK).**

ATTENTION: SERVICE DEPARTMENT FAX#: 877-249-1793

ACCT #: _____ **P.O. #:** _____ **DATE:** _____

NAME: _____ **SHIP TO:** _____

ADDRESS: _____

CITY, ST.: _____

CONTACT: _____

PHONE: _____

☐ **NON-EMERGENCY ORDER - TO SHIP WITHIN 72 HOURS IF PART(S) IN STOCK.**

☐ **EMERGENCY ORDER - TO SHIP WITHIN 24 HOURS IF PART(S) IN STOCK (IF ORDER IS RECEIVED BEFORE 1:00 P.M. E.S.T).**

SEND NOTIFICATION IF PARTS ARE NOT AVAILABLE TO SHIP WITHIN 24 HOURS VIA E-MAIL OR FAX TO: _____

METHOD OF SHIPMENT

OTHER _____

UPS	FED EX
☐ NEXT DAY A.M.	☐ NEXT DAY A.M.
☐ NEXT DAY P.M.	☐ NEXT DAY P.M.
☐ 2ND DAY	☐ 2ND DAY
☐ GROUND	☐ ECONOMY

QTY.	PART #	DESCRIPTION (SPECIFY COLOR OF ITEM IF APPLICABLE)	COLOR CODE	PRICE/PER

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P.O. Box 286
Versailles, Ohio 45380-0286
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Fax 937-526-5542
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